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In the Supreme Court of the United States

OCTOBER TERM, 1978

CECIL D. ANDRUS, SECRETARY OF THE INTERIOR,
PETITIONER

v.

SHELL OIL COMPANY AND D. A. SHALE, INC.

PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE TENTH CIRCUIT

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The Solicitor General, on behalf of the Secretary of the Interior, petitions for a writ of certiorari to review the judgment of the United States Court of Appeals for the Tenth Circuit.

OPINIONS BELOW

The opinion of the court of appeals (App. A, *infra,* la-20a) is reported at 591 F.2d 597. The opinion of the district court (App. C, *infra,* 22a-56a) is reported at 426 F. Supp. 894. The opinion of the Interior Board of Land Appeals (App. E, *infra,* 60a-121a) is reported

at 16 I.B.L.A. 112. The opinion of the administrative law judge (App. F, *infra*, 122-204a) is not reported.

JURISDICTION

The judgment of the court of appeals (App. B, *infra*, 21a) was entered on January 25, 1979. On April 16, 1979, Mr. Justice White extended the time for filing a writ of certiorari to May 25, 1979, and on May 16, 1979, he further extended the time for filing to June 4, 1979. The jurisdiction of this Court is invoked under 28 U.S.C. 1254(1).

QUESTION PRESENTED

Whether Congress ratified the administrative decision in *Freeman* v. *Summers*, 52 L.D. 201 (1927), and the subsequent grant of numerous oil shale patents, thereby excepting oil shale claims from the discovery requirement of the general mining laws.

STATUTES INVOLVED

Section 1 of the Act of May 10, 1872, ch. 152, 17 Stat. 91, 30 U.S.C. 22, provides:

> Except as otherwise provided, all valuable mineral deposits in lands belonging to the United States, both surveyed and unsurveyed, shall be free and open to exploration and purchase, and the lands in which they are found to occupation and purchase, by citizens of the United States and those who have declared their intention to become such, under regulations prescribed by law, and according to the local customs or rules of miners in

> the several mining districts, so far as the same are applicable and not inconsistent with the laws of the United States.

The Act of July 9, 1870, ch. 235, 16 Stat. 217, 30 U.S.C. 35, provides in pertinent part:

> Claims, usually called "placers," including all forms of deposit, excepting veins of quartz, or other rock in place, shall be subject to entry and patent, under like circumstances and conditions, and upon similar proceedings, as are provided for vein or lode claims * * *.

Section 37 of the Mineral Leasing Act of 1920, ch. 85, 41 Stat. 451, 30 U.S.C. 193, provides:

> That the deposits of coal, phosphate, sodium, oil, oil shale, and gas, herein referred to, in lands valuable for such minerals, including lands and deposits described in the joint resolution entitled "Joint resolution authorizing the Secretary of the Interior to permit the continuation of coal mining operations on certain lands in Wyoming," approved August 1, 1912 (Thirty-seventh Statutes at Large, page 1346), shall be subject to disposition only in the form and manner provided in this Act, except as to valid claims existent at date of the passage of this Act and thereafter maintained in compliance with the laws under which initiated, which claims may be perfected under such laws, including discovery.

The Act of July 20, 1956, ch. 652, 70 Stat. 592, amending the Act of July 17, 1914, 30 U.S.C. 122, provides:

> *Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That the first sentence of section 2 of the Act entitled "An Act to provide for agricultural entry of lands withdrawn, classified, or reported as containing phosphate, nitrate, potash, oil, gas, or asphaltic minerals", approved July 17, 1914 (38 Stat. 509; 30 U.S.C. 122), is hereby amended by striking out "such deposits to be subject to disposal by the United States only as shall be hereafter expressly directed by law" and inserting in lieu thereof, "such deposits to be subject to disposal by the United States only as shall be hereafter expressly directed by law: *Provided, however,* That all mineral deposits heretofore or hereafter reserved to the United States under this Act which are subject, at the time of application for patent, to valid and subsisting rights acquired by discovery and location under the mining laws of the United States made prior to the date of the Mineral Leasing Act of February 25, 1920 (41 Stat. 437), shall hereafter be subject to disposal to the holders of those valid and subsisting rights by patent under the mining laws of the United States in force at the time of such disposal.

STATEMENT

1. To perfect a claim under the general mining law (the Act of May 10, 1872, 17 Stat. 91, 30 U.S.C. 22

et seq.), a claimant must establish that he has discovered a valuable mineral deposit within the limits of each claim. *Cole* v. *Ralph,* 252 U.S. 286, 295 (1920). The test for value is the "prudent man test," *Chrisman* v. *Miller,* 197 U.S. 313, 322 (1905), augmented by the marketability test, *United States* v. *Coleman,* 390 U.S. 599, 602-603 (1968). The combined tests require evidence of a mineral deposit of such character that a person of ordinary prudence would be justified in the further expenditure of time and money with a reasonable expectation that the minerals from the claims could be marketed at a profit. The question here is whether these criteria apply to claims in respect of oil shale, a fine grained laminated sedimentary rock containing kerogen, organic matter that will produce oil upon destructive distillation (App. F, *infra,* 127a).

The issue remains important despite the enactment of the Mineral Leasing Act of 1920, ch. 85, 41 Stat. 437, 30 U.S.C. 181 *et seq.,* which withdrew oil shale and certain other minerals (including coal, oil and gas) from location under the general mining laws and established a new system of development by leasing rather than by the location of placer claims. Section 37 of the 1920 Act provided that "valid claims existent at date of the passage of this Act and thereafter maintained in compliance with the laws under which initiated" could be "perfected under such laws, including discovery." 30 U.S.C. 193. And a large number of oil shale claims remain outstanding.

2. In 1927 the Secretary issued a decision in *Freeman* v. *Summers*, 52 L.D. 201, upholding a placer claim for oil shale in a contest proceeding involving a homestead claim to the same land. The Secretary observed that there had been as yet "no considerable production of oil from shales, due to the fact that abundant quantities of oil have been produced more cheaply from wells * * *." 52 L.D. at 206. But he nevertheless held that oil shale could be located as a valuable mineral, reasoning (*ibid.*):

> [T]here is no possible doubt of its value and of the fact that it constitutes an enormously valuable resource for future use by the American people.
>
> It is not necessary, in order to constitute a valid discovery under the general mining laws sufficient to support an application for patent, that the mineral in its present situation can be immediately disposed of at a profit.

Following this rationale, between 1920 and 1960 the Department of the Interior issued 523 patents for 2,326 oil shale claims (App. E, *infra*, 108a).

3. In 1964 the Secretary initiated two complaints contesting the validity of nine placer oil shale claims in Colorado (App. F, *infra*, 123a).[1] Both complaints alleged first, there had been no discovery of a valuable mineral deposit on the claims prior to February 25, 1920 (the date shale oil was withdrawn from location under the general mining laws); second, if there had

[1] The claims were the Mountain Boys Nos. 1, 6, and 7, Harold Shoup Nos. 1, 2, 3, and 4, and K. C. Schuyler Nos. 2 and 3 (App. F, *infra*, 122a-123a).

been a valid discovery, the discovery was subsequently lost; and third, there was no valuable mineral deposit within the limit of the claims at the time of the contest proceedings (App. F, *infra,* 124a). The complaints requested that the claims be declared null and void (App. F, *infra,* 125a). Because of the identity of the issues and the proximity of the claims, the cases were consolidated (App. F, *infra,* 125a).

The administrative law judge found (App. F, *infra,* 176a, 179a, 184a) that the locators had made a "physical finding" of oil shale within the limits of only six of the nine claims by February 25, 1920. As to the six claims where oil shale had been physically located, the ALJ considered whether they met the traditional discovery test, *i.e.,* whether " 'a person of ordinary prudence would be justified in the further expenditure of his labor and means,' on the contested claims, 'with a reasonable prospect of success, in developing a valuable mine,' and whether the product of the mines could be marketed at a profit" (App. F, *infra,* 138a-139a; citations omitted). After reviewing the uniformly unsuccessful efforts to mine oil shale profitably anywhere in the United States during the half-century since the location of the six claims (App. F, *infra,* 145a-165a), the ALJ observed (App. F, *infra,* 165a) that "[t]he very fact that, in the more than half a century of interest in oil shale claims of the Green River Formation, not one profitable mine has been developed is a compelling reason for concluding that expenditure of money to that end would be imprudent." The ALJ rejected respondents' contention that "money spent or

obligated in the acquisition of oil shale claims" proved that the claims included valuable mineral deposits, reasoning that in order to establish a valuable discovery for purposes of the general mining laws, "[t]he mineralization must be such, not to justify the purchase of the mining claim, for possible future development, but to justify present expenditures with a reasonable prospect of developing a profitable mine" (App. F, *infra,* 166a).

The ALJ nevertheless upheld the claims. He explained (App. F, *infra,* 166a-167a) that "[i]f this were a case of first impression [he] would, for the foregoing reasons, find that both before and after February 25, 1920 oil shale was not a valuable mineral." But he concluded (App. F, *infra,* 167a-170a) that he was bound by *Freeman* v. *Summers,* and the decisions following it, which held "that oil shale is a valuable mineral subject to appropriation under the mining laws." The ALJ acknowledged that the decision in *Freeman* v. *Summers* "was poorly conceived," but he stated he was nevertheless bound by it (App. F, *infra,* 170a).

3. The Interior Board of Land Appeals (IBLA) reversed, overruling *Freeman* v. *Summers* (App. E, *infra,* 60a-121a). The Board adopted the portion of the ALJ's opinion reviewing the history of the unsuccessful attempts to develop foreign and domestic oil shale (App. E, *infra,* 75a), adding the following comments (App. E, *infra,* 105a):

> First, as a historical fact, the commercial production of oil from oil shale has never been competitive with the liquid petroleum industry. Second, the

> hypothetical studies at best confirm that the commercial exploitation of oil shale would not be competitive with the liquid petroleum industry. Third, without exception, every oil shale operation that has been attempted in this country has failed to show profitable production. Fourth, [respondents] have held these claims for half a century without attempting to exploit them.

In sum, the Board found it "unlikely that any oil shale operation could have operated at a profit at the time these claims were located or at any time up to and including the time of these contest proceedings" (*ibid.*). The Board recognized that with a breakthrough in technology or a change in the economic situation the production of oil from shale might in the future become profitable, but it held that "speculation that oil shale may someday be valuable in an economic sense is not evidence of its present value as of 1920 or 1966" (App. E, *infra,* 107a). Accordingly, since the oil shale deposits on these claims could not have been mined and marketed at a profit at the time of location or the date of contest, the Board held those deposits "never have been a valuable mineral deposit within the meaning of the general mining law" (*ibid.*).

The Board acknowledged (App. E, *infra,* 108a) that "[b]etween 1920 and 1960 the Department consistently recognized oil shale as a valuable mineral deposit" on the basis of the analysis of the *Freeman* v. *Summers* decision. In the Board's view (App. E, *infra,* 109a), "[t]he basic substantive error in *Freeman* is its underlying assumption that possible future value for mining

meets the requirement of present value." Though the *Freeman* decision relied upon *Castle* v. *Womble,* 19 L.D. 455, 457 (1894), that case held that "the requirement relating to discovery refers to present facts, and not to the probabilities of the future." The Board found that the *Freeman* decision was "clearly contrary to the mining law," and accordingly that it must be overruled (App. E, *infra,* 112a).

The Board rejected respondents' contention that if *Freeman* v. *Summers* were overruled, the decision must be given only prospective effect (App. E, *infra,* 112a-121a). The Board pointed out (App. E, *infra,* 114a) that "the only rule in effect at the time these claims were located and on February 25, 1920, was the prudent man test of *Castle* v. *Womble, supra,* requiring present marketability," and it concluded (App. E, *infra,* 115a) that "[n]either [respondents] nor their predecessors in interest could have relied on the Department's policy in 1920-1960 in locating the claims herein." It found (App. E, *infra,* 117a) no evidence that respondent D. A. Shale had "invested more than a minimal amount" in its claims, and that respondent Shell Oil Company had purchased its claims after the Secretary initiated the contest proceedings. The Board concluded (App. E, *infra,* 121a) that the continued application of the *Freeman* v. *Summers* decision, which excepted oil shale claims from the requirement of present discovery, would be "contrary to law and in derogation of the Secretary's responsibility as trustee of the public lands for the people of the United States."

4. Respondents sought judicial review of the IBLA's decision in the United States District Court for the District of Colorado (App. C, *infra*, 23a, 26a). The district court granted summary judgment for respondents, holding that the "pre-1920 oil shale claims were discoveries of valuable mineral deposits and are valid claims" (App. C, *infra*, 55a). The court concluded (App. C, *infra*, 38a) that the "Congressional and administrative involvement in the disposal of oil shale lands demonstrates Congressional approval of the *Freeman* rule of discovery," which the courts "should respect and apply * * * in the absence of Congressional action to the contrary." Alternatively, the court held that "[e]ven if the Congressional treatment of the *Freeman* rule is considered merely as an interpretative aid, and not as hardening the *Freeman* rule into an act of law, * * * the Interior Department is estopped from challenging the validity of the pre-1920 oil shale claims involved in this case," since "[p]rudent investors detrimentally relied upon the deliberate actions and statements of high government authorities" (App. C, *infra*, 40a; footnote omitted).

5. The court of appeals affirmed (App. A, *infra*, 1a-20a). The court acknowledged (App. A, *infra*, 3a) that the " 'valuable mineral deposit' standard or requirement was not met as to oil shale claims of the type here considered before 1920 as the standards were applied to the metallic minerals," but it held (App. A, *infra*, 20a) that the *Freeman* v. *Summers* standard had become "an addendum to the mining law which cannot be removed short of Congressional action."

The court noted that in 1930 Congress conducted an investigation of charges of impropriety in connection with the Department of the Interior's policies of issuing patents for oil shale claims and more particularly the decision in *Freeman* v. *Summers* (App. A, *infra,* 9a). The court concluded (App. A, *infra,* 12a) "Congress made an intense investigation into Interior's interpretation of the mining laws as to a very specific and narrow circumstance, and approved it." The court also noted (App. A, *infra,* 13a-14a) that in 1956 Congress had acted on the assumption that oil shale located prior to 1920 were valid claims when it eased one of the restrictions for taking oil shale claims to patent. In sum, the court held (App. A, *infra,* 17a) "[t]he different treatment afforded all oil shale claims as to the valuable mineral deposit element of a location became a part of the general mining laws by reason of its adoption and approval by both Houses of Congress during the intensive investigations of this very question and their affirmative resolution of the issue." Accordingly, the court held that the Department of the Interior has no authority to "change the application of the general mining laws" to these oil shale locations (*ibid.*).

REASONS FOR GRANTING THE PETITION

This decision, if permitted to stand, may require the United States to patent more than 5 million acres of federal land within the Tenth Circuit [2] for $2.50 per

[2] The number of oil shale claims cannot be precisely determined at the present time because claims located prior to February 25, 1920 were filed locally, with no requirement that the federal govern-

acre under the general mining laws,[3] despite the fact that none of the claimants has established the discovery of a valuable mineral deposit. The principal basis for this unprecedented decision is the court's conclusion (App. A, *infra,* 20a) that the investigation of two congressional committees—which resulted in no legislation, nor, indeed, even a committee report—constituted the enactment of a relaxed discovery standard for oil shale as "an addendum to the mining law." The issue presented here is important to the administration of the public lands, and it warrants review by this Court.

1. The general mining laws permit the location and extraction of "valuable mineral deposits in lands belonging to the United States." 30 U.S.C. 22. As this Court explained in *United States* v. *Coleman,* 390 U.S. 599, 602 (1968) (footnote omitted):

> Under the mining laws Congress has made public lands available to people for the purpose of mining valuable mineral deposits and not for other purposes. The obvious intent was to reward and encourage the discovery of minerals that are valuable in an economic sense. Minerals which no pru-

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ment be notified. However, Section 314 of the Federal Land Policy and Management Act of 1976, Pub. L. No. 94–579, 90 Stat. 2769, 43 U.S.C. 1744, now requires that all unpatented claims existing as of October 31, 1976, be recorded with the Department of the Interior by October 31, 1979.

Even assuming that oil shale met the discovery test, some of the claims would be subject to challenge on the ground that the claimant had not substantially satisfied the assessment requirement. See *Hickel* v. *Oil Shale Corp.,* 400 U.S. 48, 57 (1970).

[3] The land on which a valid placer claim is located may be patented by the mining claimant for $2.50 per acre. See 30 U.S.C. 37.

> dent man will extract because there is no demand for them at a price higher than the cost of extraction and transportation are hardly economically valuable. Thus, profitability is an important consideration in applying the prudent-man test * * *.

See *Chrisman* v. *Miller*, 197 U.S. 313, 322 (1905). Both this Court and the Secretary held in a number of early decisions that marketability must be shown as a present fact, not by speculation about value in the future. See, *e.g.*, *Castle* v. *Womble, supra,* 19 L.D. at 457; *John Downs,* 7 L.D. 71, 73 (1888); *Magalia Gold Co.* v. *Ferguson,* 6 L.D. 218, 220 (1887); *Davis's Administrator* v. *Weibbold,* 139 U.S. 507, 522, 523 (1891); cf. *Iron Silver Mining Co.* v. *Mike and Starr Gold and Silver Mining Co.,* 143 U.S. 394, 404-405 (1892); *United States* v. *Iron Silver Mining Co.,* 128 U.S. 673, 683-684 (1888). See also *Roberts* v. *Morton,* 549 F.2d 158, 163 (10th Cir. 1976); *Barrows* v. *Hickel,* 447 F.2d 80, 83 (9th Cir. 1971); *United States* v. *Estate of Alvis F. Denison,* 76 L.D. 233, 239-240 (1969). The present holding is wholly at odds with this salutary rule.

The requirement that the claimant show present marketability is one of the most essential elements of the mining laws. If claims could be sustained solely upon a showing of possible future profitability, it is doubtful that any claim showing any mineralization whatsoever could be ruled invalid, for no matter how "low-grade" the mineral deposit might be, there would always be the possibility that exploitation might some day become profitable when better quality deposits become exhausted or new technology makes exploitation

feasible. Recognition of claims based upon possible future profitability would not serve the purpose of the mining laws, which is to encourage the development of actual mining operations, not to enrich speculators.

2. Although correctly conceding (App. A, *infra,* 3a) that since oil shale could not in 1920, and cannot now, be marketed at a profit, "it must be concluded that the 'valuable mineral deposit' standard or requirement was not met as to oil shale claims of the type here considered before 1920 as the standards were applied to the metallic minerals," the court of appeals upheld the present claims. This was justified on the premise that Congress had been apprised of the decision in *Freeman* v. *Summers* and the Secretary's subsequent grant of numerous oil shale patents, and had acquiesced in and adopted an exception to the discovery requirement.

The court's conclusion that Congress ratified a special exception to the mining laws for oil shale claims is founded principally on the fact that in 1931 both houses of Congress conducted investigations into the charges made by Ralph Kelley, a former employee of the General Land Office, who publicly "attacked the decision in *Freeman* v. *Summers*" and "asserted that there had been fraud and favoritism in the issuance of patents" (App. A, *infra,* 9a). The court found that the *Freeman* v. *Summers* decision "was the center of attention of the House and Senate Committees," and that as a result of the committees' investigation, Congress "was thus fully informed on Interior's view and handling of the 'valuable mineral deposit' element of locations for oil shale." Although Congress took no action at the conclusion of the committees' investiga-

tions, and neither committee issued a report stating its findings,[4] the court noted that the chairman of the Senate committee wrote the Secretary that "there is no reason why your Department should not proceed to final disposition of the pending applications for patents to oil shale lands in conformity with the law" (App. A, *infra,* 11a). The court of appeals concluded (App. A, *infra,* 12a) that "we have what appears to be a unique situation where Congress made an intense investigation into Interior's interpretation of the mining laws as to a very specific and narrow circumstance, and approved it," making "an express determination that the practice had indeed become part of the mining laws and properly so."[5]

In our view, the court of appeals made too much of wholly inadequate evidence. The conclusion that a sub-

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[4] The House Committee on Public Lands did recommend legislation placing a deadline on the filing of applications for patent of oil shale claims, H.R. Rep. No. 2537, 71st Cong., 3d Sess. (1931), but the committee report did not address the decision in *Freeman* v. *Summers* or the discovery requirement. Indeed, the report quotes the Secretary's comment that "other phases" of the "general problem as to oil shale lands," such as "questions of discovery" might require legislative clarification. *Id.* at 8. The bill recommended by the Committee was not enacted.

[5] The court also noted what it viewed as a more recent indication of Congress' belief that oil shale claims were valid, the adoption in 1956 of an amendment to the mining laws making it easier for a locator with a pre-1920 claim to minerals now covered by the Mineral Leasing Act to take his claim to patent. The Act of July 20, 1956, ch. 652, 70 Stat. 592, amending 30 U.S.C. 122. In fact, however, as the district court recognized (App. C, *infra,* 36a), in enacting this legislation "Congress did not specifically address the problem of discovery at all," and moreover the amendment dealt with all the minerals withdrawn by the Mineral Leasing Act, not merely oil shale.

stantive amendment to the mining laws was accomplished when Congress simply took no action at the close of committee investigations is squarely at odds with this Court's analysis in recent cases such as *TVA* v. *Hill,* 437 U.S. 153 (1978), and *SEC* v. *Sloan,* 436 U.S. 103 (1978).

In *Hill,* TVA demonstrated that both the House and Senate Appropriations Committee Reports "generally reflected the attitude of the *Committees* either that the [Endangered Species] Act did not apply to Tellico or that the dam should be completed regardless of the provisions of the Act." 437 U.S. at 189 (emphasis in original). But, in the absence of a statement in legislation passed by the Congress that the Tellico dam was to be completed regardless of compliance with the Endangered Species Act, this Court was "unable to conclude that the Act has been in any respect amended or repealed." *Ibid.* The Court recognized, 437 U.S. at 191, that both committees had "expressly stated their 'understanding' that the earlier legislation would not prohibit the proposed expenditure" to complete the Tellico dam. But it observed that, despite the inclusion of these views in the committees' reports, "there is no indication that Congress as a whole was aware of TVA's position." 437 U.S. at 192. Accordingly, the Court held, quoting the *Regional Rail Reorganization Cases,* 419 U.S. 102, 132 (1974), that the committees' statements, " 'however explicit, * * * cannot serve to change the legislative intent of Congress expressed before the Act's passage.' " 437 U.S. at 193.

Similarly, in *SEC* v. *Sloan* this Court rejected the contention that Congress had adopted a longstanding

Commission construction that the Court concluded was "inconsistent with a statutory mandate." 436 U.S. at 118. The Court refused "to presume general congressional awareness of the Commission's construction" (436 U.S. at 121), even though Congress had reenacted the summary suspension authority "without disapproving the Commission's construction," when the Commission had "on at least one occasion made its views known to Congress in Committee hearings," and "at least one Committee [had] indicated on one occasion that it understood and approved of the Commission's practice." 436 U.S. 119, 120 (footnotes omitted). Moreover, the Court also stated that even if it were to assume Congress as a whole was aware of the Commission's construction of its summary suspension authority, it was questionable whether "such general awareness at the time of reenactment would be tantamount to amendment of what we conceive to be the rather plain meaning" of the statutory language. 436 U.S. at 121.

Thus, in *Hill* and *Sloan* the Court rejected the argument that Congress had in effect ratified an administrative construction as an amendment to previous legislation even though Committee reports recommending subsequent legislation adopted the agency's interpretation. Here, in contrast, the court of appeals found that Congress had effectively amended one of the principal requirements of the mining laws by its failure to take action after investigating Interior's actions. It is undisputed that no legislation was enacted, and no committee reports dealing with the discovery requirement were issued; the sole action taken was a letter to the Secretary from the chairman of one of the congres-

sional committees which did no more than state that the Department could "proceed to final disposition of the pending applications * * * in conformity with the law" (App. A, *infra,* 11a).

3. The court of appeals' decision clears the way for the patenting of an estimated 5 million acres of federal land in Colorado, Wyoming, and Utah to oil shale mining claimants. These lands, which include the richest oil shale deposits in the continental United States (see App. E, *infra,* 77a-78a), are also valuable for uses including grazing, recreation, and wildlife preservation. Before the Secretary is required to patent these lands to claimants who have not met the discovery requirement of the general mining laws, this Court should grant review.

CONCLUSION

The petition for a writ of certiorari should be granted.

Respectfully submitted.

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APPENDIX A

PUBLISH

United States Court of Appeals

TENTH CIRCUIT

No. 77-1346

SHELL OIL COMPANY AND D. A. SHALE, INC.,
Plaintiffs-Appellees,

v.

CECIL D. ANDRUS, SECRETARY OF THE INTERIOR,
Defendant-Appellant.

Appeal from the United States District Court for the District of Colorado (D.C. # 74-F-739)

Before SETH, Chief Judge, LOGAN, Circuit Judge, and STANLEY, District Judge.*

SETH, Chief Judge.

The Secretary of the Interior issued in September of 1964 an administrative complaint asserting that the shale oil placer mining claims here in issue were invalid. The grounds advanced for the contest were that they did not contain valuable minerals on February 25, 1920, nor do such minerals now exist on the claims. There were also applications for patent then pending. The contest proceedings were heard over a five-month

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* Of the District of Kansas, Sitting by Designation.

period by Administrative Law Judge Dalby in 1967, and he announced his decision in 1970. Twenty-six witnesses appeared; there were some 1,700 exhibits, and over 5,000 pages of transcript. The Administrative Law Judge concluded that the claims were valid, and that patents should issue.

The Government took an appeal to the Interior Board of Land Appeals (IBLA) in the Department which reversed in 1974 and held the claims to be invalid. (16 IBLA 112). The Secretary of the Interior then ordered the claims to be cancelled. The owners then obtained review of the Secretary's order in the United States District Court for the District of Colorado by these proceedings. The trial court on cross-motions for summary judgment entered judgment for the owners of the claims, and thus held the claims to be valid.

This appeal was then taken by the Government on the administrative record and the judgment of the trial court.

What constitutes a "discovery" and what may be a "valuable mineral deposit" has been the subject of many administrative proceedings and litigation. The "valuable" element has been considered under many interrelated "tests" including intrinsic value, prudent man, and marketability. It would not seem necessary to discuss the many variations. Reference should be made however to the early "prudent man" decision, Castle v. Womble, 19 L.D. 455 (1894), to United States v. Coleman, 390 U.S. 599; Enfield v. Klepee, [sic] 566 F.2d 1139 (10th Cir.); United States v. Zweifel, 508

F.2d 1150 (10 Cir.); United States v. Adams, 318 F.2d 861 (9th Cir.); United States v. Strauss, 58 I.D. 567 (1943); Jefferson-Montana Copper Mines Co., 41 L.D. 320 (1912); United States v. Black, 64 I.D. 93 (1957); United States v. Heirs of Stack, A-28157 (1960). *See also* 7 Rocky Mountain Mineral Law Institute 263; 1 American Law of Mining § 4.31; and 1 Lindley Mines § 98 (3d Ed.).

Under the mining laws, Act of July 4, 1866, Act of May 10, 1872, and Act of June 22, 1874, now generally 30 U.S.C. § 22, public lands of the United States not withdrawn from entry and containing valuable mineral deposits are open for location with some exceptions not here concerned. Nonmineral entries cannot be made on public lands deemed valuable for minerals. 30 U.S.C. § 23 relates to lode claims and § 35 provides that placer claims should be located under like circumstances and conditions and upon similar proceedings as are provided for lode claims. For lode claims there must be a discovery of a vein or lode and also a discovery of a valuable mineral deposit. For a placer claim there need only be a discovery of a valuable mineral deposit. We are here concerned with placer claims located for oil shale before the Mineral Leasing Act of 1920, 30 U.S.C. § 181.

Everything considered, it must be concluded that the "valuable mineral deposit" standard or requirement was not met as to oil shale claims of the type here considered before 1920 as the standards were applied to the metallic minerals. The lack of conformance came about as to the immediate saleability of the oil

shale or profitability as compared to other minerals. The shale was obviously different in this regard, and for the claims here concerned to be valid as found by the District Court and the Administrative Law Judge, it must be established that oil shale deposits were treated differently by the then General Land Office and the Secretary for the location of placer claims for oil shale.

The record before us does demonstrate that the value element attributed to substantial oil shale deposits to support claims was expressly treated differently than for metallic minerals by the Department of the Interior for the period 1915 to 1960. This was clearly the case as to the Green River Formation on which the subject oil shale claims are located. The mining laws were thus interpreted differently for oil shale by departmental practice, official instructions and decisions.

The record shows the ebb and flow of interest in oil shale during the period 1915 to the present time. It shows the intense interest in it as a source of oil for the Navy and to replace "foreign" oil in 1918. This was a period of decline in domestic crude oil production relative to demand, and dependence on foreign oil increased. The Department of the Interior by its publications and policies strongly encouraged the location of claims on oil shale deposits in the pre-1920 period. In 1913 there was a USGS Bulletin published on the Green River Formation oil shale, and others followed. It was a period of the creation of Naval reserves for oil, and for oil shale. The oil shale reserves for the Navy were created in Colorado and Utah by presiden-

tial order in 1916. There was then in Great Britain a method in use for extracting oil from the shale, and no problems were contemplated.

During the period 1918 to 1920 Congress was holding hearings on what became the Mineral Leasing Act of 1920, and eventually placed oil and gas and oil shale under a system of leasing rather than by placer locations. This Act made special reference to existing oil shale claims and did nothing to impair their validity. 30 U.S.C. § 193.

The Department by 1920 had thus determined that oil shale deposits, if demonstrated to contain sufficient oil, were "valuable mineral deposits" although there was no immediate market.

The Government in these proceedings has acknowledged that these claims met the discovery requirements under the 1916 to 1920 standards applied by the Department of the Interior. This was because there had been an administrative determination that valid locations could then be made on the Green River Formation oil shale beds if all other elements of a proper location were present. The geology was obviously well known, uncomplicated, and the beds were conspicuous.

After 1920 the Department of the Interior continued to patent pre-1920 oil shale claims, and the record shows that there was a careful examination of patent applications for compliance with the mining laws and to determine whether substantial oil reserves were present. There is nothing in the record before us to indicate any routine approval of such claims.

In 1927 the departmental decision in a contest be-

tween a homestead entry and an oil shale claim was issued, captioned in part Freeman v. Summers, 52 L.D. 201. This decision referred to Castle v. Womble, 19 L.D. 455, and held in substance what had been the prior administrative determination that oil shale could be considered a valuable mineral deposit.

Freeman v. Summers, in part says:

> "While at the present time there has been no considerable production of oil from shales, due to the fact that abundant quantities of oil have been produced more cheaply from wells, there is no possible doubt of its value and of the fact that it constitutes an enormously valuable resource for future use by the American people.
>
> "It is not necessary, in order to constitute a valid discovery under the general mining laws sufficient to support an application for patent, that the mineral in its present situation can be immediately disposed of at a profit."

And also:

> "The evidence in this case shows that in this particular area of Colorado the lands contain the Green River formation, and that this formation carries oil shales in large and valuable quantities; that while the beds vary in the richness of their content, the formation is one upon which the miner may rely as carrying oil shale which, while yielding at places comparatively small quantities of oil, in other places yields larger and richer quantities of this valuable mineral.

> "In other words, having made his initial discovery at or near the surface, he may with assurance follow the formation through the lean to the richer beds.
>
> "There can be no question whatever as to the greater value of the lands for their oil-shale deposits than for other purposes. Their agricultural value is negligible; their value for grazing purposes is nominal, and the real and principal value is the mineral deposit."

This determination as to value continued from 1916 to 1960, and patents were issued for oil shale claims. Some 2,326 patents were so issued. The *Freeman* decision was not particularly significant at the time, but in 1930 became the center of attention. The 1931 Report of the Secretary of the Interior stated that by then some 195,000 acres had been patented. He also estimated that the "oil shale area" in Colorado consisted of 1,496,027 acres, in Utah 2,754,950 acres, and in Wyoming 4,006,-805 acres.

There were also "Instructions" of general application issued by the Secretary of the Interior relative to the handling of applications to patent oil shale claims, dated May 10, 1920. *See* 47 L.D. 547-551. This was in response to a request for instructions from the Commissioner of the General Land Office in April 1920 relative to the first oil shale patent to be issued after the Mineral Leasing Act—the La Paz claims. These Instructions said in part: "Oil shale had long been recognized as a valuable mineral deposit and for many

years the mining of such deposits and distillation of petroleum and other mineral substances therefrom has been an extensive industry in Scotland, . . . While there are no oil shale operations in the United States that have reached that point of commercial development or production . . . ," there are publications as to processes and some experimental plans. The Instructions also refer to the requirement that homestead entries are subject to restrictions as to oil shale. The Instructions then concluded:

> "Oil shale having been thus recognized by the Department and by Congress as a mineral deposit and a source of petroleum, and having been demonstrated elsewhere to be a material of economic importance, lands valuable on account thereof must be held to have been subject to valid location and appropriation under the placer mining laws, to the same extent and subject to the same provisions and conditions as if valuable on account of oil or gas. Entries and applications for patent for oil shale placer claims will, therefore, be adjudicated by your office in accordance with the same legal provisions and with reference to the same requirements and limitations as are applicable to oil and gas placers."

There were before and after the time we have mentioned several instances of similar administrative determinations that entries could be made for specified minerals. These included in 1883 lands containing borax, sulphur, alum, and nitrates of soda, and Con-

gress in 1892 had declared that lands containing building stone were subject to placer location. Also Congress changed the law in 1955 so that sand, gravel, and other common varieties were no longer "valuable mineral deposits" to permit locations. Thus from time to time certain minerals or substances were declared subject to location, and also changes made when the need arises.

Thus the Department continued to examine applications, and, if approved, to issue patents for oil shale claims in accordance with the Instructions and the *Freeman* opinion as any other patents, and some 2,326 oil shale patents were issued. There was a period of time from about September 30, 1930, to the middle of 1931 when the issuance of oil shale patents was suspended. This period will be considered hereinafter.

The departmental standards for the examination of applications for patent of oil shale claims continued in the manner described above until the end of September 1930. By that time some 1,171 patents had issued on oil shale claims. The processing of patent applications stopped because a Mr. Kelley, who was Chief of the Field Division of the General Land Office in Denver, then published his letter of resignation. This letter attacked the departmental policies as to the issuance of patents for oil shale claims, and attacked the decision in *Freeman v. Summers*. It also asserted that there had been fraud and favoritism in the issuance of patents. This raised a cry of scandal in the press. The *New York World* paid Mr. Kelley some $12,000.00 for his story, and the matter became something of a sensation. There was thus great publicity, and Mr. Wil-

bur, the then Secretary of the Interior, answered the charges. There was thus great interest in the matter largely because the Teapot Dome scandal had but recently quieted down. The Teapot Dome scandal was, of course, of nationwide interest and involved several leading business figures, and resulted in the conviction of the Secretary of the Interior Fall. The matter concerned bribes for the issuance of oil and gas leases in Teapot Dome and Elk Hills.

Congress began an investigation into the charges made by Mr. Kelley. The Senate Committee was headed by Senator Walsh, who had been a leading figure in the Teapot Dome investigations which had, of course, centered on the Interior Department's oil and gas leasing practices.

We are only concerned because the interest of Congress was intense, and the investigation was very significant for the problem before us for the reason that it centered directly upon the standards used to examine oil shale patent applications, and because it was specifically directed to the decision of *Freeman v. Summers*. In fact, the first day of the Senate hearings, Solicitor Finney who had drafted the *Freeman v. Summers* opinion (52 L.D. 201) appeared and was questioned about it. The opinion in *Freeman* would not otherwise be of much significance, but it became important by reason of the fact it was the center of attention of the House and Senate Committees.

The investigations by Congress were thus intensive upon the very matters concerned in this case, and Congress was thus fully informed on Interior's view and

handling of the "valuable mineral deposit" element of locations for oil shale described above. We must conclude that Congress approved the departmental standards as set out in the *Freeman* case and in the Instructions as proper application of the mining laws. There were, of course, many things Congress could have done to change the practice as this was a matter of interpretation of the mining laws, and wholly within Congressional authority to change.

The House Committee concerned with the investigation recommended some legislation which would have put a deadline on filing applications for patent of oil shale claims (H.R. 2547, 71st Cong., 3d Sess.). Senator Nye, then Chairman of the Senate Committee, wrote a letter, at the conclusion of the hearings, to the Secretary of the Interior. This letter of April 1931 in part said:

> "Responding now to your letter of April 10, I have conferred with Senator Walsh and beg to advise that there is no reason why your Department should not proceed to final disposition of the pending applications for patents to oil shale lands in conformity with the law."

After the above advice, the Department resumed the examination of oil shale patent applications per the Instructions and *Freeman v. Summers,* along with all the other patent applications. There were about 1,149 oil shale patents issued thereafter until issuance was abruptly stopped in 1961.

The record shows also that the Department of Justice

conducted in 1930 an investigation of the same matters, and a report was filed in October 1930, and Secretary Wilbur was advised.

Thus we have what appears to be a unique situation where Congress made an intense investigation into Interior's interpretation of the mining laws as to a very specific and narrow circumstance, and approved it. This indeed bears no resemblance to the many Congressional silence cases, and removes any uncertainty as to whether the matter actually received attention, and also constitutes an express determination that the practice had indeed become part of the mining laws and properly so.

As mentioned above, the Department continued after the Congressional investigation to handle the patenting of oil shale claims, and the discovery-value element as before. This appears to be what Congress intended.

There was another interaction between Interior and Congress some twenty-five years after the investigation relating to oil shale claims. This arose in 1955 and 1956. There had developed during the previous years some conflicts between shale claims going to patent and homestead entries. The Act of July 17, 1914, 30 U.S.C. § 121, permitted homestead entries to be patented although there might be valuable minerals thereon, including "oil," if the minerals were reserved to the United States. This problem is described in our opinion in Brennan v. Udall, 379 F.2d 803 (10th Cir.). We there said:

> "Although the position of the Department of the Interior has varied over the years as to the form

of the reservation in patents embracing oil shale lands, it is abundantly clear that for fifty years it has consistently construed the 1914 Act to authorize the classification of lands containing oil shale deposits as a valuable source of petroleum and nitrogen and to require the reservation of such deposits where patents are issued. The Department's construction of the statute has been made a matter of public record on numerous occasions. . . ."

The other side of the homestead-shale claim conflict concerned patents sought by shale claim locators whose claims included land within the 1914 Act homestead patents. The Department's practice was to require the person seeking the oil shale patent to purchase the surface within the claim boundaries and convey it to the United States. Legislation was sought to change this requirement to permit the claim to go to patent although the surface was not owned by the United States. Interior supported this legislation and submitted a response to a request by Senator Murray for comment. This statement of the Secretary in part said: ". . . The problem which S. 2115 is presumably intended to clear up concerns the valid and subsisting rights acquired by discovery and location under the mining laws made prior to the enactment of the Mineral Leasing Act of February 25, 1920. . . ." The statement continued: "Though we heartily endorse the purpose of S. 2115 we believe certain amendments . . . ." Thus again Congress and the Department acted to permit the patenting of oil shale claims. This was to make

the patenting less burdensome on the locators and to recognize the rights acquired by the pre-1920 discovery "under the mining laws."

The Mountain Boy Claims 6 and 7 were located in 1918, and a second application for patent was filed in 1958 after a series of title problems was resolved. The final certificate was issued for patent and the file was sent to Washington for review and issuance of a patent. Assessment work had been done through the years. The Shoup Claims 1, 2, 3, and 4 were located in 1917. There was development work performed, including construction of a plant. There were some accidents, and a long period of litigation. The claims were challenged in 1928 and they were held to be valid by the Department in 1935 after hearings.

The two groups of claims are contiguous, are located in Garfield County, Colorado, in Section 14 and Section 23, of Township 7 South, Range 97 West, 6th Principal Meridian.

The claims were considered to be properly located under the 1916-1920 standards by the parties. The hearings herein as to current conditions included testimony by the Interior witnesses that there were large deposits of Green River Formation oil shale on the claims. The record shows there was a thickness of 500 to 600 feet of shale which would yield 96,000,000 barrels of oil per claim, and an additional 95 feet of shale which would yield some 20,000,000 more barrels of oil per claim. An Interior witness testified that shale from these claims could have been marketed at a profit when they were located, and at present. Dr. Vogelz testified for In-

terior that oil shale has had a value from 1917 to the present. The cost studies prepared by the Department also showed that a profitable operation was possible.

It is apparent under Cole v. Ralph, 252 U.S. 286, that a locator or owner of an unpatented claim, properly located, has a vested property interest therein. This has been universally recognized by the courts. Thus, if we recognize that the Department has acknowledged that there was a valuable mineral deposit in 1920, and at the time the claims were located, there is no discovery defect as to the locations. Since this was the only defect asserted in the contest, we must assume that the claims were valid as unpatented claims under departmental standards up until the 1961 change of policy by the Department which was sought to be applied retroactively. The owners of the claims thus had a vested property interest in the claims, unless in 1961 oil shale was not a valuable mineral deposit in 1920.

As mentioned at the outset, the Department filed proceedings to contest the claims described in the preceding paragraph. The Administrative Law Judge concluded they were valid; the Department of the Interior held them to be void; and the District Court decided that they were valid and should not have been cancelled.

The contest of these claims in 1961 marked a complete departure by the Department from the rules, the instructions, and the standards of the Department which had prevailed without exception, departure, or variation from 1915. It is also apparent from the departmental position expressed in 16 IBLA 112 (1974) that the decision of the Department reversing the Ad-

ministrative Law Judge represented a complete abandonment and reversal of everything which had gone before as to "discovery" on oil shale claims. Thus the Department concluded:

> ". . . Accordingly, we are not concerned with the assessment work requirements of 30 U.S.C. § 28 (1970), but with the question of discovery within the meaning of the mining laws. We hold that no discovery of a valuable mineral deposit has been established on the claims at issue herein."

The IBLA opinion is quite long. It discussed *Castle v. Womble,* and the prudent man test for "valuable," and the marketability test. It also reviews the history of oil shale. It recites that: "Between 1920 and 1960 the Department consistently recognized oil shale as a valuable mineral deposit," and refers to *Freeman v. Summers.* It asserts that there could have been no reliance on departmental policy. The substance of the opinion is that the Department no longer considers oil shale to be a valuable mineral deposit under the mining laws. No reason is given for the complete departure from the previous holdings. It is apparent that no changes in circumstances relative to oil shale and its development have come about. It is purely a change in departmental policy which came about by a change in the philosophy of the personnel. Thus in 1920 the Department said oil shale was "valuable" then, and in 1961 and 1974 the Department says oil shale was not "valuable" in 1920. The question is whether such a policy change can bring about the consequences sought to be obtained by the

Department, considering all that has taken place in the forty-year period. It must be pointed out that the Department since 1920 has been seeking to lease oil shale under the Mineral Leasing Act to persons who would undertake development and was able to obtain in 1974 a 210-million dollar bid on a tract offered for lease.

We must hold that the Department is not free to so change the application of the general mining laws as to the oil shale locations here under consideration. The different treatment afforded all oil shale claims as to the "valuable mineral deposit" element of a location became a part of the general mining laws by reason of its adoption and approval by both Houses of Congress during the intensive investigations of this very question and their affirmative resolution of the issue. The general mining laws were thus adjusted to accommodate the then very important practical and legal problem.

We do not put this in the category of Congressional reenactment after an administrative interpretation. There are, of course, a large number of cases in a variety of circumstances which relate to reenactments. As indicated, we are of the view that the circumstances here present take the case far beyond the doctrine set forth in these cases, and into something quite different, but they demonstrate the variety of circumstances and show the firm basis for the presumptions arising from reenactment alone. These cases were referred to by the trial court (426 F. Supp. 894), and include NLRB v. Bell, 416 U.S. 267, concerning "managerial employees"; Cammarano v. United States, 358 U.S. 498, "ordinary and necessary" business expenses; Corn Prod-

ucts Refining Co. v. Comm'r, 350 U.S. 46, purchase of "futures"; and *see* NLRB v. Gullett Gin Co., 340 U.S. 361, and Brennan v. Udall, 379 F.2d 803 (10th Cir.).

Instead of reenactment, and silence on the issue, as an acceptance of interpretation, we regard the events hereinabove described as an affirmative adoption of the very basic application of the mining laws to make it part of the statutory method for development of the oil shale reserves. It was obviously considered to be part of such an exploitation as the reserves were considered very essential. It is equally apparent that other events transpired to forestall the use of oil shale as a source of oil. These events included a large increase in domestic oil production and cheap foreign oil. Some of these events and the subsequent variations thereon came about through the actions of the Government. Thus Congress may have been wrong in its estimate as to the timing of oil shale development, but that is no reason to now change the mining laws without the benefit of Congressional consideration. In short, the changes here sought to be made by the Department as to 1920 standards incorporated in the mining laws are well beyond executive authority.

This is no more than an application of the doctrine developed over the years in the reenactment cases but in the presence of the added significant element described above at some length,—the extensive participation by Congress in the specific issue.

Thus in Corn Products Refining Co. v. Comm'r, 350 U.S. 46, the Court said after referring to three reenactments of the Tax Code and recognition for twenty

years: "This bespeaks congressional approval. *Helvering v. Winmill,* 305 U.S. 79, 83." The Court then added the other element: "Furthermore, Congress has since specifically recognized the hedging exception here under consideration in the short-sale rule of § 1233(a) of the 1954 Code."

In United States v. Leslie Salt Co., 350 U.S. 383, the Court considered Treasury's long-standing construction of what a "debenture" was and what was a "certificate of indebtedness." The Court referred to the *Corn Products* case, and the importance therein given to contemporaneous construction; then it said of the department's sudden change in definition:

> ". . . Against the Treasury's prior longstanding and consistent administrative interpretation its more recent *ad hoc* contention as to how the statute should be construed cannot stand. Moreover, that original interpretation has had both express and implied congressional acquiescence, ..."

The Court also in *Leslie Salt* refers to its opinion in Norwegian Nitrogen Products Co. v. United States, 288 U.S. 294.

The importance given to "contemporaneous" construction by the administrative officials must not be overlooked, and reference must be made again to *Leslie Salt*. Thus the officials in Interior from top to bottom considered the application of the mining laws to shale oil. This was "new," not, of course, as a new law but a new mineral. It was a "contemporaneous" construc-

tion also in the sense of an application of the law to a new situation, an application calling for a standard to be applied. It was in 1920 a "contemporaneous construction" to be given the specific consideration suggested by the Court. It is even more significant because of the attempted retroactive application to 1920 of this new and totally different position.

We do not reach the retroactive aspect as a separate issue. The doctrine relating to retroactive application of policy changes and statutory construction by agencies with the need for a "compelling reason" is considered in Logan v. Davis, 233 U.S. 613; Rough Rider, 41 L.D. 242, and in James v. Bell, 52 L.D. 197.

The combination of circumstances we have before us presents a unique situation which, as we have said above, constituted an addendum to the mining law which cannot be removed short of Congressional action. It is simply an application of the doctrine arising in the reenactment cases referred to above with special emphasis on the added element of affirmative action by Congress. The affirmative action by Congress on the point here is overwhelming.

Thus the judgment of the District Court is AFFIRMED.

APPENDIX B

UNITED STATES COURT OF APPEALS
FOR THE TENTH CIRCUIT

January Term—January 25, 1979

Before Honorable Oliver Seth, Chief Judge,
Honorable James K. Logan, Circuit Judge,
Honorable Arthur J. Stanley, Jr., Sr. District Judge.

SHELL OIL COMPANY and D. A. SHALE, INC., *Plaintiffs-Appellees,* vs. CECIL D. ANDRUS, Secretary of the Interior, *Defendant-Appellant,* STATE OF UTAH, *Amicus Curiae.*	JUDGMENT No. 77-1346 (D.C. No. 74-F-739)

This cause came on to be heard on the record on appeal from the United States District Court for the ..... District of Colorado, and was argued by counsel.

Upon consideration whereof, it is ordered that the judgment of that court is affirmed.

/s/ Howard K. Phillips
HOWARD K. PHILLIPS, Clerk

APPENDIX C

SHELL OIL COMPANY and
D. A. Shale, Inc., Plaintiffs,

v.

Thomas S. KLEPPE, Secretary of the
Interior, Defendants.

Civ. A. No. 74-F-739.

United States District Court,
D. Colorado.

Jan. 17, 1977.

FINESILVER, District Judge.

This matter is before the Court on cross-motions for summary judgment. This case is another installment of the long-enduring and multi-faceted litigation over oil shale, a mineral principally located in the Western states. For the ten year history of oil shale litigation, see *The Oil Shale Corp. v. Udall,* 261 F.Supp. 954 (D. Colo.1966), *aff'd,* 406 F.2d 759 (10th Cir. 1969), *rev'd sub nom., Hickel v. Oil Shale Corp.,* 400 U.S. 48, 91 S.Ct. 196, 27 L.Ed.2d 193 (1970), *conformed to, The Oil Shale Corp v. Morton,* 370 F.Supp. 108 (D.Colo.1973), *remanded* Sept. 22, 1975 (10th Cir.), *cert. denied, The Oil Shale Corp. v. Kleppe,* 426 U.S. 949, 96 S.Ct 3169, 49 L.Ed.2d 1185 (1976), *dec'n pending,* No. 8680 (D. Colo.).[1]

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[1] Other oil shale cases have recently been before this Court. *United States v. Eaton Oil Co.,* C–4139 (Complaint filed July 11, 1972); *U. S. Mobil Oil & Equity Oil Co.,* C–4135 (Settled Nov. 1, 1976); *Amerada Hess Corp. v. Morton,* C–4361 (Complaint filed September 26, 1972).

In the instant litigation, Plaintiffs seek judicial review of a decision of the Board of Land Appeals in the Department of Interior, *United States v. Frank W. Winegar, et al.*, IBLA 70-549, June 28, 1974, reported at 16 IBLA 112, 81 I.D. 370 (hereinafter *Winegar*), in which plaintiffs' oil shale placer mining claims were held invalid on the ground that these claims did not constitute discoveries of a valuable mineral deposit pursuant to 30 U.S.C. § 22 *et seq.* We have reviewed the *Winegar* decision, the voluminous briefs, the extensive administrative record, and have undertaken our own independent research. Plaintiffs' Motion for Summary Judgment is GRANTED.

I

The factual background of this litigation is set out in *Winegar*. The six oil shale placer mining claims in dispute, Mountain Boy Nos. 6 and 7 and Harold Shoup Nos. 1, 2, 3, and 4, were located in 1917 under the Act of May 10, 1872, 30 U.S.C. § 22 *et seq.* The Mineral Lands Leasing Act, 30 U.S.C. § 181 *et seq.*, subsequently withdrew oil shale from location but preserved "valid claims existent on February 25, 1920, and thereafter maintained in compliance with the law under which initiated, which claims may be perfected under such laws, including discovery." 30 U.S.C. § 193. By various mesne conveyances, the plaintiffs acquired title to the claims.

The instant controversy began on September 8, 1964, when the Manager, Colorado Land Office, Bureau of

Land Management, issued complaints on behalf of the United States alleging the invalidity of the claims due to a failure to discover a valuable mineral deposit. The traditional standard for determining that a valuable mineral deposit had been discovered is whether or not a prudent person would be justified in believing the deposit could be developed, extracted, and marketed at a reasonable profit. *Freeman v. Summers,* 52 L.D. 201 (1927) (hereinafter *Freeman*), held that *present* development and marketability at a reasonable profit is not necessary for deposits of oil shale. Rather, the claimant must only establish that the oil shale deposits constitute a valuable resource for *future* use and development.

Administrative Law Judge Dent D. Dalby found that the claimants did not meet the standard mining law test for a valuable resource. If he had been ruling as a matter of first impression, he would have determined the claims to be invalid. However, he found that the claimants had established that the oil shale deposits constituted a valuable resource for future use and development. Under the *Freeman* standard, he held all six claims to be valid, except for 35.4 acres of Harold Shoup No. 3 which were non-mineral in character, and are not before us on appeal.

The United States appealed the ruling to the Interior Board of Land Appeals (hereinafter the Board). The Board reversed the administrative law judge, and held the six claims to be null and void, explicitly overruling *Freeman.* The Board held that in order to satisfy the

requirement of discovery of a valuable mineral deposit, it must be shown that the deposit could have been developed, extracted, and marketed at a reasonable profit on February 25, 1920 (the date of the withdrawal of oil shale lands from location), and at all subsequent times without substantial interruption, up to the time of the contest proceedings. The Board adopted Administrative Law Judge Dalby's factual findings that despite considerable investment over the years in various techniques of extracting oil from oil shale, no prudent person was justified in believing the deposits could be presently developed, extracted and marketed at a reasonable profit.

The Board held that the claims here in issue had been filed not on the basis of their then current value—oil shale could not then be developed—but in anticipation that the oil shale would someday become a valuable mineral. The 1872 Mining Act had opened further land to exploration and purchase of "valuable mineral deposits". The overall effect of the Board's ruling was to invalidate 50,000 old mining claims. The Board's ruling expressly invalidated only six claims filed before 1920, but its precedent endangers all other pre-1929 oil shale claims covering at least 500,000 acres of Federal land in Colorado, Utah and Wyoming. One news article commented on the ruling in these words:

> But the board's ruling, unless appealed and reversed in court, would mean that no pre-1920 oil shale claim can be patented and these old claims

would be open to department action invalidating them.

"Board Ruling Imperils Oil-Shale Claims," *Denver Post* (July 2, 1974).

The claimants seek review of the decision of the Department of Interior declaring their oil shale claims invalid. They contend that (1) the rule of discovery set out in *Freeman* is a proper application of the traditional and long-established requirements of the mining laws; (2) this rule has received Congressional review and approval; (3) the Interior Department is estopped from applying any other rule to the plaintiffs' claims; and (4) the United States Government has recognized oil shale deposits as valuable mineral deposits under the mining laws. These and other contentions are discussed in Parts III and VI below.

II

[1, 2] Final decisions of the Board of Land Appeals within the Department of Interior denying the validity of mining claims are clearly reviewable under the Administrative Procedure Act, 5 U.S.C. § 701 *et seq.; Nickol v. United States,* 501 F.2d 1389 (10th Cir. 1974). The issues raised by the parties in this case are within the scope of review, namely, whether the agency's ruling is supported by law and by substantial evidence. 5 U.S.C. § 706; *Citizens to Preserve Overton Park, Inc. v. Volpe,* 401 U.S. 402, 414, 91 S.Ct. 814, 28 L.Ed. 2d 136 (1971); *Universal Camera Corp. v. National Labor Relations Board,* 340 U.S. 474, 71 S.Ct. 456, 95

L.Ed. 456 (1951); *Henrikson v. Udall,* 350 F.2d 949, 950 (9th Cir. 1965), *cert. denied,* 384 U.S. 940, 86 S.Ct. 1457, 16 L.Ed.2d 538 (1966).

III

[3] Mining laws require the discovery of a valuable mineral deposit prior to the location of a valid claim. 30 U.S.C. §§ 22, 23, 25 and 29; *Best v. Humboldt Placer Mining Co.,* 371 U.S. 334, 83 S.Ct 379, 9 L.Ed.2d 350 (1963); *Cameron v. United States,* 252 U.S. 450, 40 S.Ct. 410, 64 L.Ed. 659 (1920). The traditional definition of discovery is embodied in *Castle v. Womble,* 19 L.D. 455, 457 (1894);

> In this case the presence of mineral is not based upon probabilities, belief and speculation alone, but upon fact, which . . . show that with further work a paying and valuable mine, so far as human foresight can determine, will be developed.
>
> After a careful consideration of the subject, it is my opinion that where minerals have been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success, in developing a valuable mine, the requirements of the statute have been met.

This definition has been consistently affirmed. *United States v. Coleman,* 390 U.S. 599, 88 S.Ct. 1327, 20 L.Ed. 2d 170 (1968); *Best, supra; Cameron, supra; Chrisman*

v. Miller, 197 U.S. 313, 25 S.Ct. 468, 49 L.Ed. 770 (1905).

The "prudent-person test" in *Castle v. Womble* has been elaborated upon by the "marketability test," that is, whether the mineral can be removed and extracted at a profit:

> Under the mining law Congress has made public lands available to people for the purpose of mining valuable mineral deposits and not for other purposes. The obvious intent was to reward and encourage the discovery of minerals that are valuable in an economic sense. Minerals which no prudent man will extract because there is no demand for them at a price higher than the costs of extraction and transportation are hardly economically valuable. Thus, profitability is an important consideration in applying the prudent-man test, and the marketability test which the Secretary has used here merely recognizes this fact. (Footnotes omitted)

United States v. Coleman, supra, 399 U.S. at 602-603, 88 S.Ct. at 1330. The *Coleman* opinion points out that the prudent-person test and the marketability test are essentially the same; the latter is simply a logical extension of the former.

The parties agree upon this basic definition. Thus, the pivotal issue of the dispute lies in whether it was correctly applied to oil shale in the *Freeman* case. *Freeman* deals with two issues relating to the discovery of oil shale: (1) the extent to which a discovery of an

outcropping of oil shale on the surface indicates to a prudent person the existence of a bed of oil shale below the surface substantial enough in size to warrant development; and (2) whether oil shale need be presently disposable at a profit. Since it is conceded by the government that the plaintiffs' claims contain substantial amounts of very rich oil shale, it is only the latter issue in *Freeman* which concerns us now.

Freeman held that the claimants did not have to prove that they could presently profit from the development of their oil shale claims:

> While at the present time there has been no considerable production of oil from shales, due to the fact that abundant quantities of oil have been produced more cheaply from wells, *there is no possible doubt of its value and of the fact that it constitutes an enormously valuable resource for future use by the American people.*
>
> It is not necessary, in order to constitute a valid discovery under the general mining laws sufficient to support an application for patent, that the mineral in its present situation can be immediately disposed of at a profit. (Emphasis added)

Freeman at 206. This case appears to extend the doctrine of discovery beyond the traditional limits of the paying and valuable mine test in *Castle v. Womble* and subsequent Supreme Court opinions adopting that principle. Those cases speak in terms of the present expenditure of labor and resources in order to develop a presently profitable mine, rather than the future

developmental value of the mineral deposit. *Roberts v. Morton,* 549 F.2d 158 (10th Cir. 1976) re-affirmed the present marketability test for alumina deposits located in oil shale land.

The claimants argue that "the present value of a mineral deposit is usually dominated by the present appraisal of the future," in other words, the estimated future worth of the oil shale should be discounted to current values. Plaintiffs' Opening Brief at 130-131. The administrative law judge in his findings of fact agreed with the claimants and expressly found that the future value of oil shale has a certain economic worth, even a substantial economic worth in present-day terms. The discounted future value of a mineral deposit may well be a significant factor to the prudent person in determining whether he can profitably develop the deposit. However, the discounted future value of a mineral deposit is by itself insufficient to meet the marketability and prudent person tests of *Coleman* and *Castle v. Womble.*

[4] For purposes of these pre-1920 oil shale claims, however, *Freeman* does not represent an unwarranted extension of the traditional tests for discovery. Merely speculative claims are not discoveries of valuable mineral deposits under the *Freeman* standard. *Freeman* only extended the prudent person test to a mineral that the prudent person justifiably believed would *inevitably* become valuable, or would become marketable by the time the oil shale deposits could be sufficiently developed, and not only if the demand for the ultimate product were changed. *Roberts, supra, Coleman,* and

Castle v. Womble are distinguishable because they did not have to consider the unique position of oil shale. Of most significance to our decision is the fact that because oil shale deposits contain a potential domestic source of energy, the Government itself has acted to create a market and to encourage prudent investors to stake claims in oil shale deposits. Part V, *infra*.

IV

Claimants contend that *Freeman* is in effect an expression of Congressional intent to establish special rules of discovery for oil shale, and that to overrule it would be an interference with Congress' legislative authority. They point specifically to the legislative history of the Mineral Lands Leasing Act of 1920, an administrative ruling shortly thereafter, a general executive and congressional review of oil shale claims in 1930-31, and the enactment in 1956 of an amendment to the mining laws relating to the patenting of oil shale claims. This argument raises two issues: whether Congress did in fact approve the rule of discovery in *Freeman* and, if so, whether the nature and form of the approval warrants giving it such force that only Congress itself can repeal or overrule it.

The legislative history of the Mineral Lands Leasing Act of February 25, 1920 is unclear concerning the Congressional policy for the requirements of discovery of oil shale. As early as 1916, the Department of Interior proposed the withdrawal of oil shale lands from entry, location, and patenting under the Act of May 10, 1872, 30 U.S.C. § 22 *et seq.*, and the placement of the

lands under a leasing program. *Hearings on H.R. 406 Before the Senate Committee on Public Lands,* 64th Cong., 1st Sess., at 301, 320-321 (1196). The motivation for this and subsequent proposals was Congressional perception of the significant value of oil shale as an important source of petroleum to replace other rapidly dwindling supplies. The general view of witnesses and Congressmen was that development of oil shale was at that time not commercially feasible but would be in the near future. *Hearings on H.R. 406, supra; Hearings on S. 45 Before The Senate Committee On Public Lands,* 65th Cong., 1st Sess., pt. 4, at 250-253 (1917); *Hearings on H.R. 3232 and S. 2812 Before the House Committee on Public Lands,* 65th Cong., 2nd Sess., at 811 *et seq.* (1918); 56th *Cong. Rec.* 6984-6987 (1918).

Although the Mineral Lands Leasing Act of 1920 indicated a sharp change in the government's policy of disposing of its material resources, § 37 of that act, now 30 U.S.C. § 193, preserved existing, valid claims to oil shale. Few comments were made concerning this section, and even fewer were directed to the requirements of a valid discovery of oil shale. The remarks of Congressman Taylor of Colorado, one of the managers of the bill in the House, are typical:

> Yet the Senate and the House have both always retained in every bill of this kind the provisions of section 37 and expressly recognized and legalized and attempted to affirmatively protect the property and legal rights under the laws as they are now and have for over 40 years been on our

> statute books of the honest prospectors, the bona fide locators in good faith, and holders of rightful claims, claims that are valid and existing under existing laws at the date of the passage of this act. Those claimants, even though they may not have perfected a legal discovery under the laws are entitled to go ahead and maintain and perfect their claims under the present existing laws and obtain a patent to their lands just as though this bill had never been passed, and I hope no court or Federal department will ever attempt to deny to these people the rights which Congress looks upon as vested and is attempting in section 37 to guarantee to them.

59 *Cong. Rec.* 2711-2712 (1920). See also 59 *Cong. Rec.* 2709 (1920); 58 *Cong. Rec.* 4444 (1919); 58 *Cong. Rec.* 457-4584 (1919).

The rule of discovery at that time was the prudent person test of *Castle v. Womble.* That would indicate that oil shale was subject to the same rigorous standards of profitability and commercial development as all other locatable minerals. However, as the extensive hearings make clear, Congress was fully aware that commercial development of oil shale was not yet technologically feasible. Despite this knowledge, expressions in Congress were all in the direction and belief that oil shale lands were of tremendous value and, as Congressman Taylor's remarks indicate, that valid oil shale claims did exist.

On May 10, 1920, shortly after the passage of the

Mineral Lands Leasing Act, the Department of Interior issued *Instructions* relating to oil shale placer claims. 47 L.D. 548 (hereinafter *Instructions*). These *Instructions* were in response to the first application for patent of 14 oil shale placer mining claims under the 1920 Act. The purpose was to provide guidelines as to what constituted a discovery of oil shale under the new law. The *Instructions* held that consistent with the Department's prior position, oil shale was a valuable and, therefore, locatable mineral:

> The Department has had numerous inquiries as to the locatability and patentability of such deposits under the mining laws and in response thereto, while disclaiming any intention to expressing a binding opinion in the premises, it has nevertheless declared itself as favorable to the view that such deposits, if valuable, are subject to location and purchase under the mining laws . . .
>
> Oil shale having been thus recognized by the Department and by Congress as a mineral deposit and a source of petroleum, and having been demonstrated elsewhere to be a material of economic importance, lands valuable on account thereof must be held to have been subject to valid location and appropriation under the placer mining laws, to the same extent and subject to the same provisions and conditions as if valuable on account of oil or gas.

Id. at 549-551. The *Instructions,* therefore, determined that oil shale was sufficiently valuable to be discoverable. Only questions such as the size and richness of the

deposits would appear to remain. That this is the correct interpretation of the *Instructions* is indicated by the fact that the 14 claims which occasioned the *Instructions* were granted patents.

The next Congressional action came in 1930-31, subsequent to the *Freeman* decision which reaffirmed the principle of the 1920 *Instructions* that oil shale was valuable for discovery purposes even though not presently profitable. The immediate cause of the Congressional review was the accusation by Ralph S. Kelly, Chief of the Field Division of the Department of Interior in Denver before his resignation in 1930, that the mining laws were being improperly administered with respect to oil shale. Among other things, he pointed to what he felt was a clearly erroneous decision in the *Freeman* case. 74 *Cong. Rec.* 7080-7083 (1931); *Hearings on S. Res. 379 Before the Senate Committee on Public Lands and Surveys,* 71st Cong. 3rd Sess. (1931); *Consolidated Hearings on H.R. 3754, H.R. 12802, H.R. 13191, H.R. 15002, H.R. 15130, H.R. 15131, and H.R. 15132 Before the House Committee on Public Lands,* 71st Cong., 2nd and 3rd Sess. (1931).

The discovery rule of *Freeman* was thoroughly explored by Congress. It was clearly understood that although commercial development of oil shale was not yet feasible, claimants were nevertheless receiving patents under *Freeman* based on oil shale's future value as a source of petroleum. *Hearings on S. Res. 379, supra* at 22-27. The hearings revealed that the *Instructions* and *Freeman* had already resulted in the patenting of 184,000 acres of oil shale lands, and that

an additional 85,000 acres could be disposed of through pending patent applications. *Consolidated Hearings on H.R. 3754, supra* at 181; *H.R. Rep. No. 2537,* 71st Cong., 3rd Sess., 4, 9 (1931); 74 *Cong. Rec.* 4100-4101, 4104 (1931).

Despite this thorough knowledge of the legal aspects and practical consequences of the *Freeman* doctrine, the oil shale legislation reported to the House did not modify the *Freeman* rule of discovery. *H.R. Rep. No. 2537, supra;* 74 *Cong. Rec.* 4102-4104 (1931). Furthermore, the Chairman of the Senate Committee on Public Lands, Senator Gerald P. Nye, wrote to Secretary of Interior Wilbur that patenting should continue. Exhibit C-699 in the Administrative Record. The failure of Congress even to propose legislation that would alter the requirements of discovery under *Freeman* manifests its approval of that rule.

The most recent significant Congressional action affecting the patenting of oil shale claims was the passage of the Act of July 20, 1956, 70 Stat. 592, 30 U.S.C. § 122. This Act facilitates the patenting of oil shale claims preserved under 30 U.S.C. § 193 by eliminating the requirement that the applicant must also obtain any outstanding patent to the surface rights. However, Congress did not specifically address the problem of discovery at all.

[5] In summary, a review of the legislative history and subsequent administrative and Congressional action under the Mineral Lands Leasing Act of 1920 indicates that Congress intended and did, in fact, ratify a liberalized version of the traditional rule of dis-

covery, as embodied in *Freeman*. Although it is difficult to discern the Congressional intent from the debates preceding the enactment of the Mineral Lands Leasing Act of 1920, the 1920 *Instructions,* promulgated only three months later, disclose that oil shale was regarded as sufficiently valuable to be a legally discoverable mineral despite the lack of prospects for immediate profitable development. This administrative ruling should be accorded considerable weight (especially in view of the otherwise ambiguous Congressional intent), since it is a contemporaneous construction by those who are presumably intimately familiar with the legislative history and who are charged with the enforcement of the act. *United States v. Leslie Salt Co.,* 350 U.S. 383, 396, 76 S.Ct. 416, 100 L.Ed. 441 (1956); *Norwegian Nitrogen Products Co. v. United States,* 288 U.S. 294, 315, 53 S.Ct. 350, 77 L.Ed. 796 (1933); *United States v. Shreveport Grain and Elevator Co.,* 287 U.S. 77, 84, 53 S.Ct. 42, 77 L.Ed. 175 (1932); *United States v. Philbrick,* 120 U.S. 52, 59, 7 S.Ct. 413, 30 L.Ed. 559 (1887); *Brennan v. Udall,* 379 F.2d 803, 806-807 (10th Cir. 1967), *cert. denied,* 389 U.S. 975, 88 S.Ct. 477, 19 L.Ed.2d 468.

As noted, in 1930-1931, a major investigation was conducted by Congress into the Department of Interior's patenting of oil shale lands, including an evaluation of the discovery rule of *Freeman* and the implications it held for further patenting of oil shale lands. The failure of Congress to modify or overrule the *Freeman* doctrine when presented with an opportunity to do so is a further indication of Congress' intent. *Corn*

Products Refining Co. v. Commissioner of Internal Revenue, 350 U.S. 46, 53, 76 S.Ct. 20, 100 L.Ed. 29 (1955); *United States v. Leslie Salt Co., supra* 350 U.S. at 397, 76 S.Ct. 416; *Norwegian Nitrogen Products Co. v. United States, supra* 288 U.S. at 313, 53 S.Ct. 350; *Kay v. FCC,* 143 U.S.App.D.C. 223, 443 F.2d 638, 646-647 (1970). As was contemplated by Congress, the Department of Interior resumed patenting oil shale lands under *Freeman.*

That Congress should take a special attitude toward oil shale lands and ratify in *Freeman* an exception to the traditional discovery rule is explained by the unusual role of oil shale as a natural resource in contrast to other locatable minerals. As the Congressional hearings and debates have disclosed, oil shale was perceived as highly valuable and crucial to the national security and welfare. Congress believed that commercial development of oil shale would soon be feasible, because of its perception of the rapid depletion of existing sources of oil. That attitude has persisted, in varying degrees, to this day. Consequently, various means have been sought to foster the development of oil shale. One such technique was to liberalize the rules of discovery.

[6, 7] This long, stormy, and somewhat complicated Congressional and administrative involvement in the disposal of oil shale lands demonstrates Congressional approval of the *Freeman* rule of discovery. Consequently, the Courts should respect and apply the approved rule, in the absence of Congressional action to the contrary. An attempt by the Board of Land Appeals or this Court to overrule *Freeman* would be viola-

tive of Congressional legislative authority, and therefore improper. *NLRB v. Bell Aerospace Co.*, 416 U.S. 267, 275, 94 S.Ct. 1757, 40 L.Ed.2d 134 (1974); *Fribourg Navigation Co., Inc., v. Commissioner of Internal Revenue*, 383 U.S. 272, 283, 86 S.Ct. 862, 15 L.Ed.2d 751 (1966); *Cammarano v. U. S.*, 358 U.S. 498, 511, 79 S.Ct. 524, 3 L.Ed.2d 462 (1959); *Service v. Dulles*, 354 U.S. 363, 380, 77 S.Ct. 1152, 1 L.Ed.2d 1403 (1957); *Corn Products Refining Co. v. Commissioner, supra; National Labor Relations Board v. Gullett Gin Co.*, 340 U.S. 361, 365-366, 71 S.Ct. 337, 95 L.Ed. 337 (1951); *Wilmette Park District v. Campbell*, 338 U.S. 411, 417-418, 70 S.Ct. 195, 94 L.Ed. 205 (1949); *Crane v. Commissioner*, 331 U.S. 1, 7-8, 67 S.Ct. 1047, 91 L.Ed. 1301 (1947); *Brooks v. Dewar*, 313 U.S. 354, 360-361, 61 S.Ct. 979, 85 L.Ed. 1399 (1941); *Helvering v. R. J. Reynolds Tobacco Co.*, 306 U.S. 110, 116, 59 S.Ct. 423, 83 L.Ed. 536 (1939); *Brennan v. Udall, supra* The "re-enactment rule" enunciated in these cases should not be used in the absence of clear evidence that Congress was aware of the administrative regulation at the time of its review of the rules of discovery. *Rothenberg v. U. S.*, 233 F.Supp. 864, 866-867 (D.Kan.1964), *aff'd.*, 350 F2d 319 (10th Cir 1965); *see also* Davis, *Administrative Law* § 5.07 (1958). Here, it is clear that Congress refused to modify the *Freeman* rule despite full knowledge of its existence and meaning.

V

[8] For years, top administrators in the Interior Department have recognized the energy potential of

oil shale. They themselves generated financial and other interest in its mining. Even if the Congressional treatment of the *Freeman* rule is considered merely as an interpretive aid, and not as hardening the *Freeman* rule into an act of law,[2] we hold that the Interior Department is estopped from challenging the validity of the pre-1920 oil shale claims involved in this case. "The doctrine of equitable estoppel binds the Government for the conduct of its agents while they are acting within the scope of their employment." *Atlantic Richfield Co. v. Hickel,* 432 F.2d 587, 591 (10th Cir. 1970). *See United States v. Wharton,* 514 F.2d 406, 412-413 (9th Cir. 1975); *Fox v. Morton,* 505 F.2d 254, 256 (9th Cir. 1974); *C. F. Lytle Co. v. Clark,* 491 F.2d 834, 838 (10th Cir. 1974); *Brandt v. Hickel,* 427 F.2d 53, 56-57 (9th Cir. 1970); *United States v. Georgia-Pacific Co.,* 421 F.2d 92 (9th Cir. 1970); *McKay v. Wahlenmaier,* 96 U.S.App.D.C. 313, 226 F.2d 35, 43 (1955); *Chapman v. El Paso Nat. Gas. Co,* 92 U.S. App.D.C. 154, 204 F.2d 46, 53-54 (1953); Davis, *Administrative Law of the Seventies,* § 17.01 (1976); Comment, "Emergence of an Equitable Doctrine of Estoppel Against the Government—The Oil Shale Cases," 46 Colo.L.Rev. 433 (1975); Berger, Estoppel Against the Government, 21 U.Chi.L.Rev. 680 (1954). Prudent investors detrimentally relied upon the deliberate actions and statements of high government authorities. Such government encouragement was clearly undertaken in an official capacity, and comports with the subsequent treatment of oil shale both by the Department of the Interior in its *Instructions* of 1920 and by

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[2] *See* Davis, *supra* at § 5.07.

Congress. This is a clear case for the application of equitable estoppel against the government.

A review of public announcements and events through the years will set the proper factual perspective for oil shale development and its potential in 1920. "Interest in the commercial development of oil shale has varied directly with the need for hydrocarbon fuels and inversely with . . . the availability of shale oil's chief competitor—conventional crude oil." Thomas A. Sladek, "Recent Trends in Oil Shale—Part 1: History, Nature, and Reserves," 17 *Mineral Industries Bulletin* 1, 3 (Nov. 1974). Until shortly after the discovery of oil at Titusville in 1859, the "U.S. shale oil industry . . . was a vital part of the American economy." *Id.*

For half a century thereafter, the oil shale industry lay dormant. At the beginning of the twentieth century, oil shale was regarded even by the speculator only as an indication of the existence of a nearby oil field:

> The tunnel stopped in shale, which is certainly what is known as oil shale, but nobody imagined that it contained oil . . . No tests have yet been made of the oil, but it is probable that a sample will be sent to some expert, and possibly the oil may be developed and piped down to the city before another year has passed.

"Oil Oozing from Breast of Cowenhoven Tunnel," *The Denver Times* at 11 (February 7, 1902).[3]

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[3] Local newspapers are an invaluable source for determining whether the "prudent person" prior to February 25, 1920 thought that an investment in oil shale deposits was mere speculation or was presently capable of being developed at a reasonable profit. The

> "an expert operator . . . says he has never seen better indications for the development of a first class field, the shale encountered even in croppings is so thoroughly impregnated with oil that it burns readily and the indications of gas are to be found everywhere."

"Oil in Rio Blanco," *Id.* at 6 (May 21, 1907). *See also,* "Irrigation Project," *Id.* at 6 (May 23, 1902); "Oil Excitement in Slate Creek District," *Id.* at 9 (Feb. 23, 1903).

However, during World War I, officials of the Federal government actively encouraged Westerners to invest in Colorado's oil shale deposits: "I plead with you, men and women of the West . . . Develop your vast resources on a sound business basis . . . Let every investor get a run for his money." Speech by Dr. David T. Day, Chief of the United States Division of Petroleum Research, United States Bureau of Mines, delivered to delegates from Colorado mining associations and the public in the chamber of the Colorado House of Representatives, "Colorado's Oil Shales to Save World—Day," *Id.* at 2 (Jan. 24, 1918). "The future of the oil industry is in the hands of the people of Colorado and Utah . . . If the people of those states do not take hold and develop their resources, Eastern people will come in and reap the benefits." Speech by

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impact upon the beliefs of prudent persons can be determined from informative statements in newspaper articles. We do not consider them for the truth of the facts therein asserted, but only for their impact on the prudent mining investor. Rules 201 and 902(6). Fed. R.Evid. permit us to take notice of statements in newspaper articles without the necessity of authentication.

Day to the Colorado Civic Association "Expert Tells of Shale Riches," *Id.* (June 26, 1918).

Both Dr. Day and Interior Secretary Lane emphasized the fact that Colorado's oil shale deposits would "save the world" when the oil fields were exhausted:

> It is but a question of years—and not many of them, at that—until the oil fields of the world will be exhausted to the point where gasoline and other products of crude oil must be secured from another source and—the rich oil shales of Colorado will be that source.

"Save the World," *supra.*

Investment in oil shale, which had been scorned by prudent persons at the turn of the century, gained the interest of the financial world:

> The financial world began to regard him [an early forecaster who preached that oil shale would save the world] as anything but 'cracked' on the subject . . . until today [when] people are giving serious attention to those treasure vaults that the world up to only yesterday said contained only debris instead of untold wealth.

"Colorado's Oil Shales to Save World," *supra.*

The following announcement by Secretary Lane of the Department of the Interior helped trigger the filing of thousands of claims prior to 1920:

> The most important single act during the month of December in connection with the classification of

> mineral lands was the creation of two Naval oil shale reserves, one of 45,440 acres in western Colorado, and one of 86,584 acres in northeastern Utah. The lands thus set apart for the use of the Navy contain bodies of shale which, when mined and distilled in properly constructed retorts, yield oil of good quality. Thus far oil has not been extracted from shale in the United States in commercial quantities since the discovery of crude oil developed by wells, because oil can be secured in the latter way much more cheaply than thru the more complex process of extracting it from shales. But the oil shale industry has existed in Scotland for half a century in spite of the competition of the oil fields of the world, and the time will doubtless come when the large oil shale deposits of western United States will also be developed in a commercial way.
>
> The Naval oil shale preserves have been created to provide for the needs of the Navy during that future time when the ordinary oil fields have been so reduced that it becomes practicable and profitable to distill the more expensive oil shale.

"Colorado Shale Reservations Are Held Important." *The Denver Post* at 1 (Jan. 21, 1917). In fact, the Federal government informed Colorado's interested citizenry that its oil shale could be mined at a substantial profit, and by a simple process:

> Based on figures from the Scotch and French shale operations, shale in Colorado and her sister states

> can be mined on a large scale and give the investor better than 50 percent profit. Shale to be mined at a profit should be in veins not less than three feet thick.

"Colorado's Oil Shales to Save World," *supra.*

> Fancy processes are not needed. Just tear a leaf out of the Scotch book. They have been making profiits out of shales since 1869, and their methods are good. The industry requires manufacturers and miners. This oil shale is very tough and not easy to mine, but Colorado people are past masters of mining and will solve all such problems . . . Dr. Day stated the government thought enough of the shale deposits to create a reserve of 145,000 acres in Colorado and Utah for the future use of the Navy, but that this reserve did not by any means include the richest shales, and there is enough left unreserved for all.

"Expert Tells of Shale Riches," *supra.*

Geologists reinforced the view of Federal officials that the oil shale deposits ought to be mined, and could be mined at a reasonable net profit. *See* "Possibilities of State's Shale Outlined By Professor George," *The Rocky Mountain News* at sec. one (Jan. 1, 1918); "Natural Oil Running Short, But State Shale Will Produce For 800 Years," *The Denver Times* at 8 (Jan. 1, 1920).

[9, 10] Thus, the Government stressed the fact that oil shale deposits would *inevitably* become commercially marketable. This inevitably removed the pre-1920

claims in existing oil shale deposits from the realm of mere speculation, and gave them sufficient present value to constitute a valuable mineral deposit pursuant to 30 U.S.C. § 22 *et seq.* While we agree with the Board that speculative future value is not a sufficient showing of present value to make oil shale a "valuable mineral," certain (or apparently certain) value in the near future is sufficient evidence of present value. In the Government's encouragement of early investment in oil shale, there was no suggestion that "dramatic technological breakthroughs" or unexpected "market changes" would be necessary in order to develop the oil shale deposits and make them profitable. The Board also stated that "in the 102 years since enactment of the general mining law, value has always been determined upon present facts, not upon possibilities of the future." *Winegar,* 16 IBLA at 168. This is incorrect in that the value of *oil shale* deposits has always been determined in accordance with its future potential.

Among those early prudent investors was Karl C. Schuyler, Sr., an authority on mining law, who became a United States Senator from Colorado in 1932. His partners included George A. Taff, an engineer who had been instrumental in the construction of the Pike's Peak hydroelectric plants, and Eugene D. Milliken, United States Senator from Colorado from 1941 to 1957. Reports made by mineral examiners of the General Land Office concluded that:

> Whether or not to lessee is successful in his attempt to solve the shale question, there is no question

> but that the attempt that he is making is made on a basis sufficiently large and is done under the direction of sufficiently competent technical men to insure the belief that the men who are financing the attempt have every confidence in its success.
>
> Mention is made of these last facts to make clear the fact that in our opinion, the entire system of development work on which the applicant relies for patent, when viewed in connection with the present operations of the lessee, establishes beyond any doubt the bona fides of the work.

General Land Office Field Examiners, *Mineral Report* at p. 16 (Nov. 9, 1920). The fact that these early prudent investors were persons of prudence and mining experience who reasonably believed that a valuable mine could be developed is persuasive authority to satisfy the "valuable mineral" test, even under *Castle v. Womble, supra,* and *United States v. Coleman, supra.*

The excitement of thousands of investors who staked claims in oil shale deposits prior to passage of the Mineral Leasing Act of 1920 was fueled by a combination of factors:

> the supply of crude oil from domestic fields fell below demand, and increasing amounts of crude were imported from the new fields in Mexico. The U. S. Geological survey [sic] estimated that a nine-year supply of domestic natural petroleum remained in the United States. No additional discoveries were anticipated, and it appeared that the automobile, which was already a major element in

> American life, would soon fall idle for lack of fuel. At about the same time, the USGS announced that fantastic quantities of potential fuels were contained in the western oil shales. When combined with the predictions of a coming fuel shortage, this announcement produced an oil shale boon.

Sladek, *supra* at 3.

Interest in oil shale was dampered in the 1920's as a result of (a) lack of technology, because the industry had stagnated for a half-century, (b) widespread promotional fraud, which weakened public confidence in the industry, and (c) the discovery of abundant oil reserves in Texas, which was the single most significant factor that diminished interest in oil shale. *Id.*

During World War II, the United States became more dependent on imported oil. In response to this need, Congress passed the Synthetic Fuels Act of 1944 "which acknowledged the importance of a reliable domestic supply of fuels and which provided the Bureau of Mines with a charter to establish such a supply from the domestic oil shale deposits. The Bureau began a research program that has continued to the present day." *Id.*

Once again, the discovery of oil in the Middle East, on the continental shelf of the United States, and in Alaska, crushed public interest in oil shale until the "energy crisis" of 1973. *Id.*

In the aftermath of the fuel embargo, public interest in oil shale and in other energy alternatives has remained high. Even today, when the Alaskan pipeline is nearly completed, reports on oil shale and synthetic

fuels are given significant treatment by the press. *See, e. g.,* "Oil-Shale Funds Blocked," *The Denver Post* 1 (Sept. 23, 1976); "Interior Predicts Competitive Shale," *The Rocky Mountain News* 27 (Sept. 13, 1976); "Colorado: Tomorrow, the West," *The Denver Post* (Sept. 5, 1976); "Is Oil Shale Dead?," *The Straight Creek Journal* 6 (Sept. 2, 1976); "Kleppe 'Stumped' On Oil Shale," *The Denver Post* (Aug. 30, 1976); "Oil-Shale Loan Plan Back," *Id.* (Aug. 29, 1976); "Dead Oil Shale Project Revived," *Id.* at p. 1 (Dec. 1, 1976).

In November 1974, the Federal Energy Administration published its Final Task Force Report, *Project Independence: Potential Future Role of Oil Shale: Prospects and Constraints.* The FEA noted that estimates of oil shale resources have greatly increased since the 1920's, and that Colorado has 84% of the higher grade reserves, which are among the finest and most easily mined in the world. *Id.* at 1. The Federal government owns 80% of the known resources, although there were thousands of claims filed on this public land prior to 1920, "when oil shale was a locatable mineral under the mining laws." *Id.* at 96. The Report urges that the Government lease or sell its land to private industry at a fair market value and in a manner that would achieve efficient resource allocation by approximating a perfectly competitive market. Because the Government has refused to lease or sell its land, which contains the most valuable oil shale resources, private enterprises are unwilling to develop their privately held deposits. *Id.* at 101-102:

> a private developer will continue to be reluctant to develop private lands first so long as the possibility exists that at some future date, as a result of leasing public lands, the high grade resources would be available to potential competitors as well as whatever information the pioneering company had already developed. The situation has been assessed by the National Petroleum Council which has concluded that without the availability of public lands, development may be limited to one or possibly two plants with a combined production of 100,000 barrels per day by 1985, even though the potential is probably closer to 400,000 daily barrels. *Id.* at 102.

Even the upwardly revised cost estimates of shale oil production ($12 to $18 per barrel) indicate that shale oil could be presently competitive with oil imported from OPEC, especially if world oil prices rise. Report of the Department of the Interior, *Mining and Minerals Policy* 72 (July 1976). This report notes that the time required to determine the validity of claims filed on public lands when oil shale was a locatable mineral may impede commercial development. *Id.* at 73. *See Project Independence, supra* at 39. The Secretary of the Interior urged that a synthetic fuel commercialization bill be passed by Congress in 1976, in order to "encourage the development of the industry and provide an incentive for accelerated leasing and production of shale oil," *Id.*

At about the same time, the GAO released a report to Congress entitled, *An Evaluation of Proposed Federal*

Assistance for Financing Commercialization of Emerging Energy Technologies (Aug. 1976), wherein it recommended that the synthetic fuel commercialization bill not be passed:

> Synthetic fuels production—while technically feasible with first generation technologies—is not cost effective in that the total cost of outputs is not price competitive with foreign oil. Nor does it look as attractive when compared to other technologies, which we examined, on an incremental price basis. We believe synthetic fuels technologies would receive a high priority for Government research, development and demonstration efforts designed to develop more advanced and efficient production technologies, but we question whether assistance should be given to commercialization of synthetic fuels at the present time.

Id. at 48.

Faced with these polarized positions, on September 23, 1976, the House of Representatives defeated a proposed $4 billion loan guarantee as an incentive to produce synthetic fuel by a one-vote margin. Multiple economic, aesthetic, environmental, engineering, and political uncertainties throughout the field of energy resource development have led to this intense divisiveness within the federal government itself. Yet, the nation requires a stable, long-term policy regarding the development of oil shale deposits. Such a coherent energy resource policy is especially important today, when we have become much more reliant than before

the "energy crisis" of 1973 upon foreign oil, when the future of nuclear energy remains unclear, and when other energy alternatives are technologically and economically more unrealistic than oil shale.

> Reliance on imported energy requires acceptance of a worsening of the balance of payments. In addition to the bleak monetary picture, a certain insecurity is inevitable when the operation of the nation depends to a large extent on a steady supply of fuel from an area of the world which has been in an almost continuous state of war for over 25 years.
>
> In the long run, the United States and its neighbors will need many other sources of energy besides petroleum, and oil from the abundant reserves of oil shale will probably be one of the alternative sources. There is certainly much current interest and involvement in the oil shale business. However, at the present time oil shale is at the mercy of many political and economic elements, and it is uncertain that the current efforts will be of sufficient duration to produce a mature shale oil industry.

Sladek, *supra,* at 3-4; *See* Hon. Wayne N. Aspinall "Oil Shale Development Handicapped by Government Indecision," 59 Quarterly of the Colorado School of Mines 91 (July 1964).

Because of the instability of the Government's energy policy, it has appeared prudent, at times, to invest in oil shale, while at other times, such investment has appeared merely speculative. While the courts cannot prevent the Government from having an unstable

energy policy, the courts must prevent the Government from altering legal standards that have been relied upon by investors for the past half-century.

Since World War I, prudent mining investors and industrial giants have purchased oil shale land in the reasonable expectation that future profits would justify such purchases. *See Winegar, supra* at 134-138. The Standard Oil Company of California began to purchase Colorado land bearing oil shale in 1943 "for their oil shale resources," which Standard considered valuable. (Deposition of W. S. Svenson at 28). Since 1927, Texaco has acquired nearly 30,000 acres of oil shale land in Colorado and Utah in the belief that such an acquisition has been prudent. (Deposition of C. E. Moser at 47). Since 1955, Mobile Oil Co. has acquired about 20,000 acres of oil shale land, and holds an option to purchase about 12,000 other acres "in the expectation of eventually returning a profit justifying the purchase" (deposition of T. W. Nelson at 40). Since 1952, Cities Service has acquired about 10,000 acres of Colorado oil shale land, and considers that investment to have been prudent (deposition of D. M. Anthony at 30-32). Since 1961, TOSCO has acquired about 30,000 acres of oil shale land in Colorado and Utah, and regards this as a prudent investment: "a viable industry cannot exist without the ownership of these reserves" (testimony of H. Koolsbergen, Tr. 5033).

Apart from the fact that the Board's reversal of the *Freeman* standard has ignored a century of reliance on the prudent man standard as it applies to the peculiar situation of oil shale, such action could jeopardize

the future of our nation. It is apparent that world crude oil prices can only continue to rise. With constantly depleting oil reserves, there must come a time when the recovery of oil from shale will be competitive with crude oil. At this critical juncture, the future of oil shale investment ought not to be tied up in decades of litigation. As with every other industry, the technology would improve during competitive private development. Prudent investors might be those who recognize that we cannot wait until the next severe shortage of crude oil (which may be the final shortage). In our view, *United States v. Coleman, supra,* did not superimpose the requirement that shale oil be presently competitive with crude oil. Prudent investors can foresee a time in the not-too-distant future when it will be cheaper to supply more of this country's energy needs with the vastly greater amount of shale oil.

VI

The Tenth Circuit and this Court have recently considered the applicability of the "prudent man" test in the area of mining claims. *United States v. Zweifel,* 508 F.2d 1150, 1157 (10th Cir. 1975); *Hallenbeck v. Kleppe,* No. 75-786 (D.Colo., Aug. 31, 1976).

> The government must go forward with sufficient evidence to establish prima facie the invalidity of contested claims, and the burden then shifts to the claimant to show by a preponderance of the evidence that his claim is valid

Zweifel, supra at 1157; *Hallenbeck, supra* at 7.

[11-13] In view of the Federal Government's own

statements which encouraged prudent investors to stake claims in oil shale deposits, we find that the Government has not established a prima facie case of invalidity. We do not hold that an administrative agency cannot overrule its own long-standing precedents. However, because of subsequent Congressional approval, the *Freeman* standard can only be overruled by legislative action. Even if we were to hold that the Board itself could overrule *Freeman,* and that it could determine that oil shale can no longer be regarded as a valuable mineral under the prudent investor test, the Government cannot assert that the very oil shale claims it had encouraged are not valid. The reversal of the original intention of the Interior Department and of Congress requires application of estoppel against the Government. *See Vassiliou v. District Director of Immigration & Nat. Serv.,* 461 F.2d 1193, 1195 (10th Cir. 1972). Moreover, where an established rule has long been relied upon by investors, an administrative agency should not reverse its position on a retroactive basis. See *NLRB v. Majestic Weaving Co.,* 355 F.2d 854, 859-861 (2d Cir. 1966) (Judge Friendly). We hold that the six pre-1920 oil shale claims were discoveries of valuable mineral deposits and are valid claims.

VII

Accordingly, IT IS HEREBY ORDERED that Plaintiffs' Motion for Summary Judgment is GRANTED. Defendant's Motion for Summary Judgment is DENIED.

IT IS FURTHER ORDERED that by February 1,

1977, Plaintiffs are to submit an Order and Form of Judgment setting forth their claims with particularity and description and implementing the Court's ruling herein.

APPENDIX D

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

SHELL OIL COMPANY AND D. A. SHALE, INC., *Plaintiffs,* vs. CECIL D. ANDRUS, Secretary of the Interior, *Defendant.*	Civil Action No. 74-F-739 JUDGMENT

[Filed Feb. 1, 1977, James R. Manspeaker, *Clerk*]

This action having come before the Court on cross motions for summary judgment and the issues having been duly considered and a decision having been duly rendered,

IT IS ORDERED AND ADJUDGED that Judgment enter for Plaintiffs, Shell Oil Company and D. A. Shale, Inc., and against Defendant, Cecil D. Andrus, Secretary of the Interior, as follows:

1. The decision of the Board of Land Appeals in the Department of the Interior in *United States v. Frank W. Winegar, et al.,* IBLA 70-549, June 28, 1974, reported at 16 IBLA 112, 81 I.D. 370, is reversed.

The oil shale mining claims owned by the respective plaintiffs and involved in this action and their legal descriptions, as set forth in the location certificates, are as follows:

Shell Oil Company Claims	*Legal Descriptions*
Mountain Boy 6	Section 14, northwest quarter
Mountain Boy 7	Section 14, southwest quarter
D. A. Shale, Inc. Claims	
Harold Shoup 1	Section 23, southeast quarter
Harold Shoup 2	Section 23, northeast quarter
Harold Shoup 3	Section 23, NE 1/4 NW 1/4, E 1/2 SW 1/4 NW 1/4, and SE 1/4 NW 1/4
Harold Shoup 4	Section 23, southwest quarter,

all within Township 7 South, Range 97 West, 6th Principal Meridian, in Garfield County, Colorado.

2. The applications to patent plaintiffs' claims are remanded to the Department of the Interior. The defendant and his subordinates shall expeditiously process those applications consistent with the Order granting summary judgment. Absent good cause shown, such processing shall be based on the existing administrative record.

3. The Court retains jurisdiction for the purpose of entry of such further orders and directions as may be necessary or appropriate for the construction or carrying out of this judgment or this Court's Order of January 17, 1977, granting summary judgment for plaintiffs in this action.

4. Each party to pay its own costs.

Dated at Denver, Colorado, this 10th day of February, 1977.

FOR THE COURT:

JAMES R. MANSPEAKER, *Clerk*
By: Stephen P. Ehrlich
STEPHEN P. EHRLICH,
Chief Deputy

Approved:
Sherman G. Finesilver
SHERMAN G. FINESILVER,
United States District Judge

APPENDIX E

UNITED STATES DEPARTMENT OF THE INTERIOR
OFFICE OF HEARINGS AND APPEALS
INTERIOR BOARD OF LAND APPEALS
4015 Wilson Boulevard
Arlington, Virginia 22203

UNITED STATES
v.
FRANK W. WINEGAR, et al.

IBLA 70-549 Decided June 28, 1974

Appeal from a decision of Administrative Law Judge Dent D. Dalby, holding that five and a portion of a sixth oil shale placer mining claims are valid and can proceed to patent. (Colorado Contest 359, 360)

Reversed.

Mining Claims: Determination of Validity—Mining Claims: Discovery: Marketability

To satisfy the requirement of discovery of a valuable mineral deposit within the boundaries of an oil shale placer claim located prior to February 25, 1920, it must appear that at that time the mineral deposit could have been developed, extracted, and marketed at a reasonable profit; it must also appear that such marketability has continued without substantial interruption from that time to the time of the contest proceedings. Where it has been shown that at no time would a

prudent man have expended further labor or means in order to develop actual mining operations, discovery of a valuable mineral deposit has not been made, and the claims must be declared null and void.

Mining Claims: Determination of Validity—Mining Claims: Discovery: Marketability

In order for an oil shale deposit to be considered valuable within the meaning of the general mining law, it must appear as a present fact, as of February 25, 1920, and at all times thereafter that the deposit could be developed, extracted, and marketed at a reasonable profit. The possibility of dramatic technological breakthroughs or changes in market conditions at some future date has no bearing on value as a present fact.

Mining Claims: Determination of Validity— Mining Claims: Discovery—Rules of Practice: Evidence

What men have or have not done over a period of years is proper evidence as to the conduct of a prudent man in the same or very nearly the same circumstances. Where oil shale claims had been held for fifty years and no commercial production was achieved on such claims, it must be concluded that no prudent man would have been justified in the belief that the mineral deposit could be developed, extracted, and marketed at a reasonable profit.

Rules of Practice: Generally

Departmental precedent will be overruled where it is shown: 1) that it is contrary to the law as interpreted by the courts and this Department, and 2) it would result in the disposition of public lands to those not entitled to receive them. *Freeman* v. *Summers,* 52 L.D. 201 (1927), is overruled.

APPEARANCES: Albert V. Witham, Esq., Office of the Regional Solicitor, Department of the Interior, Denver, Colorado, for appellant; Tweedy & Mosley, Denver, Colorado, and Clearly, Gottlieb, Steen & Hamilton, New York, New York, attorneys for appellees, Frank W. Winegar and Shell Oil Co.; Senior and Senior, Salt Lake City, Utah, attorneys for appellee, D. A. Shale, Inc.

OPINION BY CHIEF ADMINISTRATIVE JUDGE FRISHBERG

The United States appeals from that part of the decision by Administrative Law Judge (formerly Hearing Examiner) Dent D. Dalby dated April 17, 1970, validating placer mining claims Mountain Boy Nos. 6 and 7, and Harold Shoup Nos. 1, 2, 3 and 4.[1] The basic

[1] There were nine claims involved in the proceedings below: the Mountain Boy Nos. 1, 6, and 7, and K.C. Schuyler Nos. 2 and 3, and the Harold Shoup Nos. 1, 2, 3, and 4. The Mountain Boy No. 1, and the K. C. Schuyler Nos. 2 and 3 were declared invalid by Judge Dalby for lack of a physical finding of oil shale on the claims prior to February 25, 1920. Additionally, Judge Dalby found that 35.4 acres of the Harold Shoup No. 3 were non-mineral in character. That portion of the decision is final since no appeal was taken as to those claims.

issue presented in this appeal is whether the oil shale on the subject claims was a valuable mineral deposit as of February 25, 1920, when oil shale was withdrawn from location under the general mining law by the Mineral Leasing Act of February 25, 1920, 30 U.S.C. § 181 *et seq.* (1970), and, if so, whether such oil shale has continued to be a valuable mineral deposit within the meaning of the general mineral law, 30 U.S.C. § 22 *et seq.* (1970).[2]

The Mountain Boy Nos. 6 and 7 were surveyed in 1917 in 160-acre legal subdivisions. The location certificates were recorded February 6, 1918, showing location on January 8, 1918, by the same eight locators for both of the claims. Between 1917 and the early 1950's ownership of the claims changed several times. In 1956 Frank Winegar made an agreement with Shell Oil Company that he would attempt to purchase the Mountain Boy claims and use due diligence to obtain patents thereto for Shell. Shell agreed to buy the claims after patenting for $60 per acre and to reimburse Winegar's expenses up to $12,800.00. Winegar obtained title to a number of Mountain Boy claims, including Nos. 6 and 7. On August 7, 1958, he filed a patent application with the Bureau of Land Management for Mountain Boy Nos. 1-8. In a report of December 14, 1959, a Bureau

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[2] Section 37 of the Act, 30 U.S.C. § 193, also excepted claims on which a discovery had not been made by February 25, 1920, but on which work leading to a discovery was being diligently prosecuted on that date and was thereafter continued to a discovery. *See Starks* v. *Mackey*, 60 I.D. 309, 310 (1949). No party asserts that the claims in issue fall within this exception. Therefore, this exception will not be restated in further discussion below.

evaluation engineer recommended that patents be issued for the Mountain Boy Nos. 1, 6 and 7. A final certificate was issued by the Bureau of Land Management on November 30, 1960, for such claims. On March 21, 1961, the final certificate was approved for patent by a Minerals Adjudicator of the Bureau. The application was sent to the Director of the Bureau of Land Management for issuance of patent. A patent was not issued. Instead, some three and one-half years later, Colorado Contest 359 was initiated. Subsequently, Shell purchased the Mountain Boy Nos. 1, 6 and 7 from Winegar in November 1964 for $30,000.

The Harold Shoup Nos. 1, 2, 3 and 4 were located on September 29, 1917, by eight co-locators. The location certificates were recorded by October 27, 1917. S. D. Crump acquired such claims and quitclaimed them to Karl C. Schuyler, Sr., on May 24, 1923. When Schuyler died testate on July 31, 1933, the claims passed to his wife. On July 6, 1960, she incorporated D. A. Shale, Inc., under the laws of the State of Colorado, and transferred possessory title of the claims to such corporation. On September 29, 1960, the corporation filed an application for patent of these and other claims.

The instant case arose on September 8, 1964, when the Manager, Colorado Land Office, Bureau of Land Management, issued two complaints on behalf of the United States alleging the invalidity, *inter alia,* of the claims herein and requesting that they be declared null and void. Both complaints charged that:

A. Valuable minerals were not found within the lim-

its of the Claims on or before February 25, 1920, or subsequent to February 25, 1920, as a result of diligent prosecution of work leading to a discovery on February 25, 1920, and thereafter continued so as to constitute a valid discovery within the meaning of the mining law.

B. If a valid discovery was made on or before February 25, 1920, or subsequent to February 25, 1920, as a result of diligent prosecution of work leading to a discovery on February 25, 1920, and thereafter continued, the discovery was subsequently lost and the lands within the claims reverted to and became a part of the vacant unappropriated public domain.

C. Valuable minerals do not now exist within the limits of the claims so as to constitute a valid discovery within the meaning of the mining law.

On October 7, 1964, contestee D. A. Shale, Inc., filed an answer to the complaint denying the allegations. On November 9, 1964, contestee Frank W. Winegar, having obtained an extension of time in which to respond, filed an answer similarly controverting the allegations. At the same time Shell Oil Company filed a motion to intervene, alleging that it had purchased the Mountain Boy claims from Winegar. This motion was granted on November 9, 1964.

On March 9, 1967, leave was granted to the contestee to amend their answers to the complaints. The two cases were joined for hearing and decision. The hearing on the complaints was commenced on June 20, 1967,

at Denver, Colorado, and continued until October 13, 1967. A further hearing was held on November 20, 1967, at Salt Lake City, Utah.

After these adjudicatory proceedings Judge Dalby made an extensive review of the applicable mining law with respect to the evidence presented in the proceedings and concluded:

> If this were a case of first impression I would, for the foregoing reasons, find that * * * oil shale was not a valuable mineral deposit. (Dec. at 55).

However, because of prior departmental precedent, particularly *Freeman v. Summers,* 52 L.D. 201 (1927), Judge Dalby felt that he was precluded from entering such a finding; accordingly he held that five claims and a portion of a sixth were valid.

Appellant contends that there is no basis in fact or law for that holding and that prior departmental precedent with respect to oil shale is in error and should be overruled. Appellees argue that prior departmental precedent is a correct statement of both fact and law, but even if that precedent is to be overruled, such action may only be given prospective effect.

I. The Mining Law

The general mining law provides in pertinent part that

> all *valuable* mineral deposits in lands belonging to the United States * * * shall be free and open to exploration and purchase * * *. Act of May 10, 1872, *as amended,* 30 U.S.C. § 22 (1970). (Emphasis added).

From 1872 to 1920 oil shale was locatable under the general mining law. However, the Mineral Leasing Act of February 25, 1920, withdrew oil shale from disposition under the mining law, except as provided in Section 37 thereof, 30 U.S.C. § 193.

Since enactment of the general mining law, the courts and the Department of the Interior have consistently held that a valuable mineral deposit has been discovered where there have been found within the limits of a claim minerals of such quantity and quality that a prudent man would be justified in the expenditure of his labor and means with a reasonable prospect of success in developing a valuable mine. *United States v. Coleman,* 390 U.S. 599, 602 (1968); *Cameron v. United States,* 252 U.S. 450, 460 (1920); *United States v. Iron Silver Mining Co.,* 128 U.S. 673, 675 (1888); *United States v. Zweifel,* 11 IBLA 53, 80 I.D. 323, 328-29 (1973); *Oregon Basin Oil and Gas Co. (On Rehearing),* 50 L.D. 253, 254 (1924); *Castle v. Womble,* 19 L.D. 455, 457 (1894).

Although both appellant and appellees agree with that general statement of the law, appellant contends that the facts of this case mandate the conclusion that oil shale is not now and was not in 1920 a valuable mineral deposit, while appellees assert the opposite.

The clear purpose of the law has always been to obtain the development of actual mining operations. Several years after enactment of the general mining law the Supreme Court stated:

> It is the policy of the government to favor the development of mines of gold and silver and other

> metals, and every facility is afforded for that purpose * * *.
> *United States v. Iron Silver Mining Co.*, 128 U.S. 673, 675 (1888).

Eighty years later the Court adhered to the same view:

> Under the mining laws Congress has made public lands available to people for the purpose of mining valuable mineral deposits and not for other purposes.
> *United States v. Coleman*, 390 U.S. 599, 602 (1968).

Decisions of this Department are in accord with that reasoning. We have stated several times that actual mining operations are the best evidence that a mineral deposit is valuable. *See, e.g., United States v. Kosanke Sand Corp. (On Reconsideration)*, 12 IBLA 282, 304; 80 I.D. 538, 549 (1973); *United States v. McKenzie*, 4 IBLA 97, 100 (1971). It is where actual mining operations have not been initiated that the difficulty arises in determining whether a mineral deposit is valuable. While proof of actual sales of minerals from a claim is not an indispensable element in establishing their marketability, lack of development and sales may raise a presumption that the market value of the minerals found thereon was not sufficient to justify the cost of their extraction. *Barrows v. Hickel*, 447 F.2d 80 (9th Cir. 1971); *Palmer v. Dredge Corp.*, 398 F.2d 791 (9th Cir. 1968), *cert. denied*, 393 U.S. 1066 (1969); *United States v. Humboldt Placer Mining Co.*, 8 IBLA 407 (1972). Although such a presumption

can be overcome by evidence showing that a mineral deposit could have been extracted, removed and marketed at a profit on or prior to a given date, such findings have been rare. *Cf. Verrue v. United States,* 457 F.2d 1202 (9th Cir. 1972), *rev'g United States v. Verrue,* 75 I.D. 300 (1968); *United States v. Gibbs,* 13 IBLA 382 (1973); *United States v. Harenberg,* 9 IBLA 77 (1973), with cases cited above.

The Department of the Interior's seminal decision in determining whether there has been a discovery of a valuable mineral deposit is *Castle v. Womble, supra.* In that case an agricultural entryman had applied for a patent. Several mining claimants protested on the basis that they had discovered a valuable mineral deposit. In resolving the dispute, the Department tied the test of value to the concept of an operating mine as the desired end of the general mining law:

> [W]here minerals have been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success, in developing a valuable mine, the requirements of the statute have been met.
>
> 19 L.D. at 457.

This formulation, often referred to as "the prudent man test," has received the continuing approval of the courts. *Chrisman v. Miller,* 197 U.S. 313, 322 (1905); *Cameron v. United States, supra; United States v. Coleman, supra.*

In the years since promulgation of the prudent man test, the Department has found it necessary to state explicitly that for a mineral deposit to be considered valuable it must be capable of extraction, removal and marketing at a profit. This test of marketability has been approved by the Supreme Court in *United States v. Coleman, supra,* as a logical complement to the prudent man test:

> Minerals which no prudent man will extract because there is no demand for them at a price higher than the cost of extraction and transportation are hardly economically valuable. Thus, profitability is an important consideration in applying the prudent-man test, and the marketability test which the Secretary has used here merely recognizes this fact.

The ruling in *Coleman,* approving the marketability test employed by the Department, is and has always been applicable to all mining claims. *Converse v. Udall,* 399 F.2d 616 (9th Cir. 1968), *cert. denied,* 393 U.S. 1025 (1969), and cases cited therein at pp. 621-22.

The courts clearly defined value with respect to the purpose of the general mining law: the development of actual mining operations. It is equally clear that the level of anticipated profits must be sufficient to attract prudent investment capital to develop actual mining operations. For that reason we have held on several occasions that mineral deposits which will yield only meager profits are not valuable within the meaning of the general mining law, since no prudent man would invest in actual operations in those circumstances. *E.g.,*

United States v. Edwards, 9 IBLA 197, 203 (1973); *United States v. Harper,* 8 IBLA 357, 369 (1972).

In addition to the prudent man test and its logical complement, the marketability test,[3] the Department has developed several standards to aid in the determination of value.

First, it must appear as a *present* fact that there would be a reasonable prospect of success in developing an operating mine that would yield a reasonable profit. *Castle v. Womble, supra; Davis's Adm'r. v. Weibbold,* 139 U.S. 507, 523 (1891). Speculation with respect to future changes in market conditions, dramatic breakthroughs in technology, or the hoped-for discovery of a mother lode will not demonstrate as a *present* fact that a prudent man would be justified in initiating actual mining operations. *Foster v. Seaton,* 271 F.2d 836, 838 (D.C. Cir. 1959); *United States v. Denison,* 76 I.D. 233, 239 (1969); *United States v. Jenkins,* 75 I.D. 312, 318 (1968); *United States v. Larsen,* 9 IBLA 247, 266 (1973).

The *Castle v. Womble* decision, as already noted, issued as a result of proceedings between an agricultural entryman and mineral claimants; this was the typical situation in which the mining law developed.[4] It would

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[3] For an incisive and more extensive analysis of the application of the marketability test, *see United States* v. *Larsen,* 9 IBLA 247 (1973).

[4] There were other similar situations which give emphasis to the requirement that the property be valuable for mining as a present fact: 1) disputes between two mining claimants for the same area, where prior in time of discovery was prior in right; *Clipper Mining Co.* v. *Eli Mining & Land Co.,* 194 U.S. 220 (1904); and 2) disputes

have been inequitable to allow the defeat of a homestead entry by those asserting that the lands might someday be valuable for mining without demonstrating present value.

In addition to the historical concern for equity between competing claimants, there is a more fundamental reason for continued adherence to the present value requirement: there is no practical alternative. Lands may not pass from the public domain under the general mining law unless the Department is persuaded that they are valuable for mining. *United States v. Coleman, supra.* If marketability could be predicated upon possibilities of the future, the variables introduced would be endless. Since few, if any, of these variables are susceptible to reasonable predictability, the marketability test would be reduced to mere speculation, and any meaningful conclusion as to value would disappear in a sea of conjecture. The effects of permitting such vagueness in the administration of the law were accurately forecast by Judge Friendly in his lectures on administrative law: 1) capriciousness and 2) undue political influence.[5]

A second standard is that actions of others in the same or very nearly the same circumstances may be used as evidence of what would constitute prudent investment activity. For example, a mining claimant would be justified in initiating actual mining opera-

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over whether a placer claim was known to contain a mineral deposit at the time patent was issued. *United States* v. *Iron Silver Mining Co.*, 128 U.S. 673 (1888).

[5] H. FRIENDLY, THE FEDERAL ADMINISTRATIVE AGENCIES 19-24 (1962).

tions on mineral showings that are the same or very nearly the same as those where actual mining operations have been successfully brought to fruition by others. *See, e.g., Cascaden v. Bortolis,* 162 F. 267, 270 (9th Cir. 1908).

In the same manner, failure to undertake actual operations may be used as evidence that no prudent man would be justified in so doing. For instance, if mining claimants have held claims for several years and have attempted little or no development of actual operations, a presumption may be raised that there has been no discovery of a valuable mineral deposit. This was the case in *Cameron v. United States, supra,* where six years had elapsed from the date of location to the date of the hearing. There the Supreme Court stated:

> Sufficient time has elapsed since these claims were located for a fair demonstration of their mineral possibilities.
>
> 252 U.S. at 457.

For similar holdings, *see United States v. Ruddock,* 52 I.D. 313 (1927), where 17 years had elapsed without production; *Starks v. Mackey,* 60 I.D. 309 (1949), 29 years; *United States v. White,* 72 I.D. 522 (1965), 38-39 years; and *United States v. Flurry,* A-30887 (March 5, 1968), where the Department stated:

> * * * the most persuasive evidence as to what a man of ordinary prudence would do with a particular mining claim is what men have, in fact, done or are doing, not what a witness is willing to state that a prudent man would do.

A third standard is that money expended on further exploration or further research, but not on initiation of actual operations, is evidence only that further exploration or research may be justified; it is *not* evidence that the mineral exposed is valuable, or that prudent men would be justified in initiating actual operations. *United States v. New Mexico Mines, Inc.*, 3 IBLA 101, 106 (1971).[6]

As previously noted, oil shale was withdrawn from location under the general mining law by the Mining Leasing Act of February 25, 1920, 30 U.S.C. §§ 181, 193, 241 (1970). The mining claims which are the subject of the present appeal were located prior to the date of such withdrawal. Therefore, the validity of such claims must be tested by the value of the mineral deposit as of the date of the withdrawal, as well as at the date of determination. *Barrows v. Hickel, supra; Mulkern v. Hammitt*, 326 F.2d 896 (9th Cir. 1964). If the claims were not supported by a qualifying discovery of a valuable mineral deposit at the time of withdrawal, the land embraced within the boundaries of the claims would not have been excepted from the effect of the withdrawal, and the claims could not thereafter become valid even though the value of the deposit subsequently increased due to a change in the market value of the mineral. *United States v. Henry*, 10 IBLA 195, 199 (1973); *United States v. Gunsight Mining Co.*, note 6, *supra; United States v. Pulliam*, 1 IBLA 143 (1970); *United States v. Duval*, 1 IBLA 103 (1970).

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[6] For an imaginative analogy, *see United States* v. *Gunsight Mining Co.*, 5 IBLA 62, 69 (1972).

Even if the mining claims are supported by a valid discovery, it is clear that a discovery may be lost. We have frequently held that discovery may be "lost" due to exhaustion of the deposit or to changes in market conditions of substantial duration. *Best v. Humboldt Placer Mining Co.*, 371 U.S. 334, 336 (1963), *citing with approval United States v. Logomarcini*, 60 I.D. 371, 373 (1949), and *United States v. Houston*, 66 I.D. 161, 165 (1959). *See also Mulkern v. Hammitt, supra; Adams v. United States*, 318 F.2d 861, 871 (9th Cir. 1963); *Multiple Use Inc. v. Morton*, 353 F. Supp. 184 (D. Ariz. 1972), *aff'g United States v. Silverton Mining and Milling Co.*, 1 IBLA 15, 18 (1970); *United States v. Charleston Stone Products, Inc.*, 9 IBLA 94, 100 (1973); *United States v. Denison, supra.*

II. The Distribution and Development of Oil Shale

The geographic distribution and the history of the development of both foreign and domestic oil shale were very ably set forth in the opinion rendered by Judge Dalby. Accordingly, we adopt those portions of his decision which are set forth below, changing the numbers of the footnotes therein to follow ours sequentially.

"BACKGROUND

"Geographic Distribution of Oil Shale

"The contested claims were located for oil shale. Oil shale is a fine-grained, laminated, sedimentary rock containing solid organic material called kerogen which, upon destructive distillation, will produce a substantial

amount of oil. The kerogen is derived from deposition of aquatic plants and smaller amounts of animal life in lakes during various geological periods. Oil shale does not contain appreciable amounts of oil.

"Oil shale was deposited in a wide span of the earth's geological history from the Cambrian to recent periods. Shale deposits that yield at least 10 gallons of oil per ton occur in all of the continents. There are both high and low grade oil shale deposits in Africa of late Paleozoic and early Mesozoic age. In the Stanley Basin of the Congo, extensive deposits of oil shale of Triassic age exist in beds that aggregate about 30 feet in thickness and yield more than 25 gallons of oil per ton. There are extensive deposits in China, Israel, Jordan, Syria, Siberia, Thailand, Burma and Turkey. The oil shale resources of Asia have been estimated at 70 billion barrels in deposits that yield more than 25 gallons per ton. Deposits occur in Australia and New Zealand. The known higher grade deposits are estimated to contain 280 million barrels oil equivalent.

"In Europe there are substantial oil shale deposits in the Balkan Peninsula and adjacent area, France, Germany, Great Britain, Italy, Austria, Switzerland, Luxembourg, Russia, Spain, Portugal and Sweden. The recoverable oil shale resources of Europe are estimated to contain a total of more than 30 billion barrels, mostly in shales that yield more than 25 gallons per ton. In South America, oil shale deposits are known to exist in Argentina, Brazil, Chile and Uruguay. These oil shale resources are estimated to contain 50 billion barrels of recoverable shale oil.

"In the United States, deposits of oil shale of varying nature and extent have been reported in the States of Alabama, Alaska, Arkansas, California, Colorado, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Missouri, Michigan, Montana, Nevada, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Virginia, West Virginia, Wisconsin and Wyoming. A large fraction of shale deposits of the United States contain small amounts of organic matter which will yield from one to five gallons of oil per ton on destructive distillation. These rocks have not been considered as oil shale. In addition, some sandstones, siltstones and limestones contain solid organic matter which yield very small amounts of oil. Possibly half or more of the sedimentary rock areas of the country will yield a small amount of oil. Oil shale can, therefore, be subject to several definitions. One authority defines oil shale as organic-rich shale that yields at least 10 gallons (3.8) percent of oil per ton.[7]

"The oil shales of highest concentration of organic matter are in the Green River Formation of Colorado, Utah and Wyoming and the Tiglukpuk Formation in Alaska. These are the only North American oil shales in the United States in the 25 to 100 gallons per ton range. The Green River Formation shales of this grade have been estimated to contain 600 billion barrels. The

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[7] G-97, pp. 3, 10-16; Tr. 3448, 3450, 3455.

The Contestant's exhibits are designated by the prefix "G" and the Contestee's by the prefix "C." "CFF" refers to the Contestee's Proposed Findings of Fact.

Tiglukpuk Alaskan shales of similar grade have been estimated to yield 250 billion barrels.[8]

"The Green River Formation is considered by geologists to have been formed in an inland lake which, at one time, covered an area of some 16,000 square miles in the States of Colorado, Utah and Wyoming. The formation resulted from lake and stream depositions extending over a period of some eight to ten million years. During the course of the evolution of the Green River Formation, tuff beds were formed in localized areas from airborne volcanic ash. In some instances, fairly great thicknesses of tuff were deposited.[9]

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"Foreign Oil Shale Activity

"Oil shale development in foreign countries stimulated interest in the possible development of Western United States shales and has relevance in determining what expenditures might prudently be made in the United States. Several of the foreign deposits have been commercially exploited.

"Production of fuels from oil shale preceded the production from petroleum. Shale oil was first produced in France in 1838. Subsequent oil shale operations were started in Scotland in 1850; Australia in 1865; Brazil in 1891; Germany in 1916; Sweden and Estonia in 1921; Spain in 1922; Manchuria in 1929; and South Africa in 1935. A number of these continued until recent years when they succumbed to eco-

[8] G-97, p. 9.

[9] Tr. 83, 86, CFF-1; CFF-10.

nomic pressures from the petroleum industry. Today, only the Estonian and Manchurian operations survive.[10]

"In France, the shale oil industry grew until about 1864 when competition of imported petroleum caused a decline. The French Government, at least intermittently, provided support of one kind or another, such as imports duties on foreign petroleum or direct subsidies. In 1893, oil shale production was about 190,000 tons. By 1900, production reached 220,000 tons, increased to 500,000 tons during World War II, and then declined. The industry ceased in the early 1960's.[11]

"The Scottish industry used oil shale, recovered by underground mining, which assayed generally in the range of 25 to 35 gallons per ton. After 1850, more than 140 companies and individuals engaged in oil shale ventures. By 1870, these were reduced to 51, and by 1910 only six companies remained. By 1920, the operations were consolidated under one parent company, Scottish Oil Ltd. The Scottish oil shale production in the early 1870's was approximately 500,000 long tons per year and reached 3,000,000 tons annually by 1910. Production thereafter gradually declined to essentially nothing in 1964.[12]

"Oil Shale Activity in the United States

"The oil shale industry in the United States started about 1850. By 1860 there were 53 companies producing oil by distillation of various bituminous substances, including oil shale. Natural petroleum was discovered

[10] G-290, pp. 29, 39; G-479, pp. 109, 110, 111; C-1025; CFF-45.
[11] G-281, p. 15; G-290, pp. 25, 26; G-419, p. 50; C-1025, pp. 1, 2.
[12] G-290, pp. 29, 30, 32, G-419, p. 56, 57.

at Titusville, Pennsylvania, in 1859 and the American petroleum industry came into being. This reduced the price of kerosene so much that oil shale operations became unprofitable. The plants were abandoned or adapted to petroleum refineries.[13]

"Interest in oil shale revived in the 1910 to 1920 period and has continued to the present time.[14]

"An examination of how prudent persons expended their means with respect to oil shale during this period will provide the guide in determining whether oil shale was, as of February 25, 1920, a valuable mineral. Because the evidence in this respect is massive, the examination is limited to some corporations and the Government, whose activities are directed by the composite judgment of experienced officers.

"*Robert M. Catlin,* a businessman and a member of the American Institute of Mining and Metallurgical Engineers, between 1890 and 1915 purchased approximately 140 acres of oil shale land, leased approximately 480, and obtained an interest in 140 acres of unpatented mining claims. He visited Broxburn, Scotland, in 1901 to study the Scottish shale oil operation, and in 1914 began research and development with the Elko deposits. In 1915, a 100-foot shaft was sunk in his mining property. The following year he erected a 20-ton per day retort which proved unsatisfactory and was later dismantled. In 1917, he incorporated the

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[13] G-290, pp. 60, 61; G-419, p. 99; C-721, pp. 38-39; C-853, p. 151; CFF-288.

[14] C-721, pp. 39-45.

'Catlin Shale Products Company' and transferred his oil shale land to the company for stock.[15]

"In 1918, the company began the construction of eight 100-ton per day retorts which differed in design from the 1915 models. The retorts were in operation in May of 1919 and by July the new plant had produced 15,000 gallons of shale oil. A refrigerator plant, wax press, stills and agitator were added to the plant the latter part of 1919 and early 1920. Sometime later, probably 1920, the Catlin Company's retorts were shut down. A third retort, 40 feet high and 12½ feet in diameter, was constructed and put in operation in December of 1921. This retort was operated intermittently until October 18, 1924.[16]

"In 1924, the shale oil products were offered for sale for the purpose of testing the market. The products apparently could not be marketed in competition with petroleum products. On December 23, 1930, the Company was dissolved. Its operation was admittedly experimental.[17]

"*The Oil Shale Mining Company* was incorporated in Colorado on October 2, 1916, as a public stock company with a capitalization of $100,000. It acquired six mining claims about 15 miles west of DeBeque, Colo-

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[15] G-23, p. 101; G-722, Part 1, pp. 9, 10, 12, 17, 18; G-722, Part II, p. 30, G-724E, G-724G, Lease No. 4349; G-724I, pencil notes of R. M. Catlin, Sr.; G-724N, Deeds 276-F, 278-F and 384-F; CFF-57; CFF-58, CFF-105.

[16] G-722, Part I, pp. 19, 20, 43; G-724H, Catlin letter, May 19, 1919; G-724J, letters of October 13, 1919 and December 2, 1919; CFF-78.

[17] G-722, Part I, pp. 13, 40, 41; G-722B; G-724B; G-724J, letter by R. M. Catlin dated August 8, 1919.

rado. In 1916, the company built a bunkhouse and a cookhouse near the claims. In 1917, the buildings were moved to a new location and an externally heated, six to eight-ton per day batch-type Henderson retort, 18 feet high and 12 to 15 inches in diameter, and a tramway were constructed. By the end of 1918 or the early part of 1919 the company had six of these retorts, only one of which was assembled and operated on an experimental basis. By 1920, the company experimented with a continuous type of retort, invented by its superintendent, A. V. Young, which was subsequently abandoned.[18]

"The company produced a few barrels of oil in 1920 and 30 barrels in 1921. Oil shale for the retorts was obtained from small pits on the claims during the period from 1917 to 1921. By 1926, the company lost its properties through attachments.[19]

"*The Monarch Shale Oil Company* was incorporated in October 1919. The corporation acquired 240 acres of oil shale land, located about 13 miles northeast of DeBeque, Colorado. By April 1921, the company had erected a Ginet retort (named after its inventor and president, Joseph H. Ginet), 18 to 25 feet long and 3½ feet in diameter, with a capacity of about 50 tons of shale per day. During 1921, the plant was operated on 11 or 12 occasions for short periods and produced a total of 71 barrels of shale oil. The retort was 'not run to any extent' during 1922 and was not operated

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[18] G-115, pp. 4, 6, 7, 14, 15, 20, 27, 40, 47, 114, 115, 130-133, 139, G-241, p. 30.

[19] G-115, pp. 28, 40, 113-118, 130; G-241, p. 30; CFF-57.

at all during 1923. Some test runs were made in 1924. The shale for charging the retort was taken from a tunnel driven 75 feet into the side of the cliff above the plant.[20]

"*The Mount Logan Shale Mining and Refining Company* was incorporated in Colorado in July 1917. It obtained seven unpatented mining claims located about five miles from DeBeque, Colorado, on Mount Logan. The company erected a plant in Western Colorado in 1918, using three Galloupe retorts of a 20-ton capacity per day. After test runs in 1919 and 1920 proved this retort to be unsatisfactory, the company erected a Simplex retort similar to the Galloupe. The Simplex was 21 to 30 feet long and about 3 feet wide with a capacity of about seven tons, producing 12 to 15 barrels a day. The company obtained its shale from a 100-foot tunnel into the cliff. The total cost of the plant was estimated at approximately $70,000. The corporation made some experimental runs of oil shale in 1920 and 1921. The company became defunct in October 1926.[21]

"*The Index Shale Oil Company* was incorporated in Colorado in October 1920. It obtained possessory title to eight oil shale claims and equitable ownership in an additional 15 others. Index began constructing an experimental plant in 1920 about 15 miles northwest of DeBeque, Colorado, using the Brown retort invented

[20] G-116, pp. 4-8, 14, 20, 48, 67, 70, 71, 80, 86, 93, 101, 106, 119, 120; C-212.

[21] G-61, No. 8; G-117, pp. 1, 7, 9, 10, 12, 15, 19, 20, 24, 31, 32, 34, 59, 61, 75, 89, 99-102, 118, 143, 145; G-168, p. 21; C-213, p. 326; C-455; C-457; C-959, pp. 31, 32; CFF-80, CFF-106.

by its largest stockholder, Harry L. Brown. The retort was 75 feet long, two and one-half feet in diameter. Experimental runs of oil shale indicated that changes in design and equipment were necessary. Additional equipment was added in 1926. In 1928 the company was in receivership. The corporation mined its shale from a tunnel driven 60 feet into the face of the cliff.[22]

"*The March Oil Company* was incorporated in August 20, 1917, in the State of Colorado by a group of businessmen, including K. C. Schuyler. The company's mining property, consisting of about 2,400 acres of oil shale, was located three to four miles north of Grand Valley on Parachute Creek. In 1917 the company leased its mining claims to K. C. Schuyler who agreed to work the claims and to refine and dispose of oil shale and its products. In 1920 and 1921 Schuyler and George Taff, working for or in partnership with Schuyler, constructed a plant at a cost of $100,000. The plant consisted of some buildings and sheds, a one-and-one-half-mile tramway, crushers and engine. A retort was designed by Taff, ordered from a Wisconsin manufacturer, but never delivered. In mid-1921 a cable on the tram broke killing nine men. The plant was never completed.[23]

"*The Continental Oil Shale Mining Company* was incorporated in Arizona in November 1920. The company obtained mining claims by merger with the Oil Devel-

[22] G-118, pp. 1, 2, 31, 47, 49, 51, 52, 53-130, 154, 155, 163, 165, 166, 167; G-624E, pp. 172-207.

[23] G-61, No. 18; G-125, pp. 10, 15, 19, 21, 22, 30, 43; C-972, Exs. No. 1, pp. 1, 2, No. 3, p. 1, No. 4, p. 7, and Nos. 10 and 12; C-973, p. 54; CFF-81; CFF-353; CFF-358; CFF-362.

opment Company. In 1919, it constructed a plant, 20 miles north of Rifle, Colorado, on Piceance Creek, consisting of a bunkhouse, a residence for a superintendent, a blacksmith shop, a crusher, and a Colorado continuous retort, invented by two Denver engineers. The vertical retort was about 22 feet high and two feet in diameter, having a capacity of 50 tons of shale per day.[24]

"*Shell Oil Company* became interested in oil shale by 1945. By August 1954, Shell had acquired 3,624 acres of oil shale property at a cost of $123,014.35. Shell continued to acquire oil shale lands. In 1965, it entered into an option to purchase the Cathedral Bluff claims in the Piceance Creek Basin. The options on these 21,000 acres specified a purchase price of $2,000 an acre. The total cost to Shell would be in excess of $43,000,000, including $1,000,000 as the cost of maintaining the option. In the span of 10 to 15 years, the price of oil shale lands to Shell had risen from 500 to 700 percent and in the two years prior to 1964 had risen as much as 250 percent. As of 1964, Shell's holdings consisted of 5,300 acres of fee property, options to purchase 3,300 acres of fee lands and options to purchase 24,400 acres of unpatented mining claims. During the period of acquisition of the oil shale claims, Shell made economic studies of the feasibility of extracting and refining oil from oil shale, but has no current plans for mining and processing oil shale.[25]

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[24] G-61, No. 13; G-126, pp. 35, 44, 70, 71; G-168, p. 15; G-580, LL-4, p. 1-16; C-454, p. 4.

[25] G-509, p. 31; G-514, pp. 31, 80, 81; C-741; Tr. 4815, 4816, 4844, 4848, 4916; CFF-318.

"*Cities Service Company,* through its subsidiary Empire Gas & Fuel Company, began locating oil shale claims in Sweetwater County, Wyoming, in 1918. By August 1923, the company asserted ownership in 48 claims, totaling 7,680 acres of oil shale land. The evidence does not indicate whether Cities Service Company presently asserts title to these early locations.[26]

"In early 1951, Cities Service Oil Company, a subsidiary of Empire Gas & Fuel Company, acquired an option to purchase 8,300 acres of oil shale land at $50 per acre, which it exercised in 1953. Since 1952, Cities Service Oil Company has acquired about 10,000 acres of oil shale land in Garfield County, Colorado, at a cost of about $500,000. Other than the acquisition of oil shale properties, Cities Service Oil Company's activities have been limited to core drilling and testing of oil shale samples. The company has no program for the commercial development of oil shale.[27]

"*Standard Oil Company of California* began investigating the possibilities of producing shale oil and refined products from oil shale in 1918. The investigation included geological examination of the oil shale in California, Nevada, Utah and Colorado, the 'devices for utilization' of them, and an economic analysis of the possible profitability of doing so. Laboratory retorting experiments were conducted in 1920 and from 1925 to 1928. In 1921, the company obtained a patent for its process of 'hydroxination of oil shale' developed

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[26] G-636E, pp. 60, 111, 116, 129; G-636F, pp. 11, 16; CFF-110.
[27] G-636, pp. 7, 8, 9, 10, 12, 30; G-636F, pp. 18, 23, 24; CFF-314.

by its research. In 1925, the company made intensive studies on the extraction of oil from solids.[28]

"Standard began the purchase of Colorado oil shale land in 1943. By 1954, it had acquired 39,736 acres of patented land, 8,057 acres of unpatented mining claims, and an option or a partial interest to 17,628 acres, for a total of 65,421 acres. The total cost of this acquisition was approximately $5,000,000. By 1967, the company's patented land totaled approximately 44,000 acres in blocks of sufficient size to support a commercial oil shale operation. The company is now one of the largest holders of patented oil shale land.[29]

"*Standard Oil Company of Ohio (Sohio)* first became interested in oil shale in 1962. From 1964 through 1967 the company spent or obligated itself to spend $28,800,000 for acquisition of 43,631 acres of patented oil shale lands in the Green River Formation. In addition, the company holds interests in options which, if exercised, would entail additional investments.[30]

"*The Oil Shale Corporation (Tosco)* interested Sohio in its retorting process. In September 1964, the two companies joined with Cleveland Cliffs Iron Company in a joint venture agreement and formed the Colony Development Corporation for the purposes, among others, of building and operating a prototype plant to determine the economic feasibility of the Tosco II process, developing an experimental mine and mak-

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[28] G-629C, pp. 4, 12, 13, 27-47, 68, 69, 75, 78, 97, 98; C-723, Part I, p. 57; C-567, p. 1; CFF-110.

[29] G-629, p. 28; G-629B; G-629D, p. 149; G-629E; CFF-311.

[30] G-604, pp. 8, 19-20; G-604A.

ing engineering and cost studies directed to the establishment of a commercial oil shale operation. Facilities, including a 1,000-ton per day prototype retort, were constructed and placed in operation in 1965. During its subsequent operations the plant produced over 50,000 barrels of crude shale oil. By June of 1966 sufficient prototype data had been obtained to enable a qualified engineer to make an order of magnitude estimate of the capital cost of a commercial plant. The estimate came out substantially higher than the studies made prior to the construction of the plant. A difference of opinion relative to the causes and solution of this problem developed between the joint venturers. Sohio and Cleveland Cliffs felt that the problems of reducing capital costs should first be solved, then the prototype redesigned and operated. Tosco wanted to operate the plant and solve the high capital cost problem simultaneously. The differences were solved in September 1966 by placing the agency company, Colony, on an inactive status, having Cleveland Cliffs continue the mining experiment for the joint accounts of the joint venturers, and permitting Tosco to continue operating the retort for its own account. If the project were successful, the joint venturers contemplated entering into a commercial operation. In accordance with the agreement, Sohio studied alternative processes for extracting oil from shale. In 1966 it agreed to an exchange of information with Union Oil Company after joint studies of Union's retorting process.[31]

[31] G-604, pp. 24, 25, 26, 29, 37; G-604C; Tr. 5063; CFF-298.

"Tosco holds an interest in over 30,000 acres of oil shale lands in Colorado and Utah acquired at a cost of about $10,000,000.[32]

"Tosco's president testified that the company intends to have a commercial plant of approximately 53,000 barrels per calendar day 'on stream' during 1970.[33]

"*Texas Oil Company (Texaco)* began exploring the possibilities of oil shale in 1918, and began acquiring interests in the oil shale lands of the Green River Formation in 1927 through the acquisition of the California Petroleum Company and its subsidiary, the Colorado-Ventura Company. Since 1927, the company has acquired 29,000 acres of patented oil shale lands in Colorado and Utah at a cost of $1,500,000. From 1945 to 1947, Texaco made a refining study of oil shale for the Navy at its own expense. Beginning in 1957, after experimentation with other methods of extracting oil from shale, Texaco constructed and operated a pilot plant and developed its own 'hydrotorting process for extraction of shale oil.' The company has spent over $1,000,000 in oil research in the past 20 years.[34]

"*Mobil Oil Corporation's* interest in oil shale began in 1940. A research program to evaluate the potential of shale as a source of oil was begun in 1943. A pilot plant was constructed at Paulsboro, New Jersey, and an experimental program was carried out between 1943 and 1945. Further research and study of oil shale was

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[32] C-1065; CFF-316.

[33] Tr. 5069; CFF-328; CFF-332.

[34] G-642, pp. 20, 25, 26, 43-45, 51, G-642C, p. 41; G-642F, G-642G; CFF-313.

continued. Since 1965, the company has been conducting a research program at Anvil Points in cooperation with five other major oil companies which includes additional refining, economic and mining studies. Mobil has, since 1955, purchased oil shale lands of the Green River Formation. At the present time, it holds an undivided half interest in 24,591 acres of patented oil shale land, the entire interest in 10,131 acres of patented oil shale land, for which it paid approximately $3,000,000. It also holds an option to purchase 17,440 acres of unpatented oil shale claims and 330 acres of patented land which, if exercised, will cost an additional amount of approximately $1,800,000.[35]

"*Union Oil Company of California* became interested in oil shale in 1920. Since 1920, the company has acquired an interest in 57,319 acres of oil shale land, of which 37,166 are patented, and a 'surface only' interest in an additional 2,617 acres, at a cost of over $2,500,000. Beginning in 1924, Union conducted studies of existing oil shale processes, made analyses of oil shale samples and undertook an oil shale research program. Starting in 1944, it constructed and operated an experimental retort with a two-ton per day capacity. In 1948 it completed a scale-up model with a 50-ton per day capacity which was dismantled in 1956. Union spent a total of $438,000 on oil shale research from 1947 to 1954. On January 31, 1955, Union's Board of Directors approved a $5,000,000 expenditure for a two-year oil shale research project, which would include the erection of a demonstration plant in Colorado of one thou-

[35] G-633, pp. 8-10, 39, 40; G-633A; G-633B, p. 1; CFF-312.

sand tons per day capacity. The demonstration plant was started in 1955 and completed by May 1957. The plant was run intermittently into July 1958.[36]

"*Major Oil Shale Holdings*

"Oil companies and other business interests have become interested in the commercial prospects for oil shale development. In addition to expenditures for developing technology, many companies have acquired interests in land containing oil shale deposits in the Green River Formation. In the Piceance Basin, the major owners of either patented or unpatented oil shale claims, were, as of 1964:

A. *Large Oil Companies*

Cities Service Company
Continental Oil Company
Getty Oil Company
Gulf Oil Company
Humble Oil & Refining Company
Marathon Oil Company
Pan American
Pure Oil Company
Shell Oil Company
Sinclair Oil Corporation
Socony Mobil Oil Company, Inc.
Standard Oil Company of California
Texaco, Inc.
Union Oil Company of California

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[36] G-625, pp. 14, 15, letter dated June 20, 1920; G-626, pp. 61, 92, 112-117, 222, 232, G-895, G-927, pp. 2-4; C-905; C-907, pp. 5, 6, Fig. 5; C-910; CFF-310; CFF-317.

B. *Major Group Holdings*

Dow Chemical Company
Doyle, et al.
Dutton
Eaton Shale Company
Energy Resources Technology Land Company
Gabbs Exploration Company
Kerogen
Massive Group
Oil Shale Corporation
Parachute Oil Shale Company
Ruth Group (Ertl et al.)
Savage Oil Shale Development Company
Sunset Group (Gabbs Exploration Company)
Texas National Petroleum Company
Wasatch Development Company [37]

"Oil Shale Research by the United States Government

"The United States Government conducted extensive oil shale research. A 1901 Government publication noted the occurrence of oil shales in Colorado and Utah. In 1913, efforts were started by the Government to determine the extent of the deposits and their oil potential. In about 1916, the Bureau of Mines began laboratory work on oil shale in Washington, D.C., and by 1919 laboratory facilities were operated in Utah.[38] The work in Utah included standardizing methods of

[37] C-333, p. 5; CFF-309.
[38] G-419, p. 99, C-850, CFF-64.

testing, studying methods of assaying oil shale for commercially recoverable oil and ammonium sulfate, conducting retorting experiments on different oil shales and analyzing shale oils and other products manufactured by different retorting processes and refining the retorted oils to determine the commercial value of the refined products.[39]

"In January 1920, the Bureau of Mines established, under an agreement with the State of Colorado, a laboratory at Boulder, Colorado. The following month small scale experimental studies, concerned primarily with fundamentals of oil shale retorting and yields and characteristics of shale oil products, were begun.[40]

"In 1924, a Presidential Naval Fuel Oil Committee, appointed to study the problem of obtaining adequate supplies of fuel oils for the Navy, recommended that the Bureau of Mines determine the feasibility of oil shale as a source of shale oil. Congress authorized the construction of a pilot oil shale plant and during the four-year program appropriated more than $229,000 for the study. The Bureau erected two large-scale experimental retorts at Rulison, Colorado, the Pumpherston and the NTU, and opened a quarry at Anvil Points to provide oil shale for the program. The oil shale mine and the retort were operated periodically from 1926 through 1929. The refining studies showed that the shale oil could be refined to acceptable products, al-

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[39] G-419, p. 99; C-8, p. 70; C-276; C-717; C-850; CFF-64; CFF-93.

[40] C-330.

though less readily than conventional crude petroleum.[41]

"In 1944, Congress passed the Synthetic Liquid Fuels Act (P.L. 290, 78th Cong., App. April 5, 1944; 58 Stat. 190, 30 U.S.C. 321 et seq.). The Act authorized the Secretary of the Interior to construct and operate demonstration and pilot plants to produce synthetic liquid fuels from oil shales, coal, agricultural and forestry products and other substances and to conduct laboratory research. The Bureau of Mines constructed a demonstration plant at Rifle, Colorado, which included two NTU retorts and opened an oil shale mine at Anvil Points. The retorts were first operated in May 1947.[42]

"Other pilot plant operations were conducted. One was at Pueblo, Colorado, using a Hayes low temperature coal carbonization retort under a cooperative agreement with the Colorado Fuel and Iron Corporation and another at Wilson Dam, Alabama, using a Royster retort owned by the Tennessee Valley Authority. As a result of the experience gained in the operation of the retorts and study of other processes, a Gas Flow retort was designed by the employees of the Bureau of Mines in 1946 and 1947. A retort embodying the principles considered to have the best prospects of success and a pilot plant incorporating these features was built at Rifle, Colorado. Later, another retort, the

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[41] G-246, pp. 1525, 1533-1534; G-302, pp. 299, 307; G-438, pp. 1, 5, 6, 25, 27, 150; C-277, p. 60; C-284; C-286-289; C-383, letter dated June 5, 1924, from Secretary Work to Director, Bureau of the Budget, pp. 1, 2; CFF-256; CFF-257; CFF-258.

[42] G-139, p. 32; G-159.

Dual-Flow, was designed, constructed and operated. Originally, the authority of the Synthetic Liquids Fuel Act was limited to five years, but two amendments extended the period covered by the Act to a total of 11 years, ending in April 1959. During those 11 years about $82,000,000 was expended. Of this amount, nearly $22,000,000 was directly applicable to work on oil shale.[43]

"Since the end of the Synthetic Liquid Fuels Program, research work by the Federal Government has continued at the Bureau of Mines Research Center at Laramie, Wyoming. The annual budget for this work for the past 20 years has been about $1,500,000.[44]

"The foregoing is illustrative of the expenditures made by corporations and the Government in the promotion and development of oil shale.

"*Cost Studies*

"An objective of the Bureau of Mines programs at Rulison and Rifle, the Union Oil Company's demonstration plant and the Tosco-Sohio-Cleveland Cliffs operations, was to obtain data upon which an informed judgment could be made as to whether expenditures in an oil shale mine would be justified. Not until a commercially feasible mining and retorting process competitive with petroleum was developed could a prudent man expect to develop a profitable oil shale mine.

"All of the cost studies indicated that oil shale was not competitive with petroleum. At the request of the

[43] G-139, pp. 37, 41-44, 47, 90, 91; G-159; G-467, p. i; C-545; CFF-308.

[44] Tr. 3472, CFF-308.

Secretary of the Interior, the National Petroleum Council made a study in 1950 and 1951 of synthetic fuel costs, including synthetic fuels derived from oil shale and prepared a final report dated February 25, 1953. The Economic Subcommittee made estimates of the cost of producing gasoline from oil shale under various assumed conditions. These costs varied between 13.9 cents [per gallon], where the hypothetical plant included no housing or community development, to 15.2 cents where the assumed operation included complete housing and community development, including housing for employees, housing for tradespeople, teachers, general community facilities comprising streets, utilities, schools, and commercial buildings. The Committee's reports stated that 'neither of these cases [the minimum and maximum expenditures], however, is believed to represent the probable situation. In order to obtain an adequate stable labor supply at the minimum investment, it is the opinion of the Subcommittee that the housing program would approach that of [housing for employees and general community facilities].'[45]

"Where only general community facilities were provided, the Economic Subcommittee determined the cost of producing gasoline from oil shale would be 14.7 cents per gallon. The cost included taxes and an assumed six percent return on invested capital. The average refinery price for gasoline in Los Angeles at the time of the study was 11.7 cents per gallon. In the final report

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[45] G-300; G-451, Appendix A1, Appendix I40-41; CFF-334.

of the National Petroleum Council's Committee on Synthetic Liquid Fuels Production Costs, February 26, 1953, the committee stated that for each increase of one percent return on investment after taxes the gasoline costs from the single plant cases would be 1.3 cents per gallon. This ratio indicates the shale oil plant could, in 1951, have been operated at a slight profit. However, the committee concluded that a return of between 12 and 15 percent on total invested capital would be required in order to attract investment capital.[46]

"The Bureau of Mines made a cost study in 1951. While the Bureau and the National Petroleum Council were 'in good agreement on many points,' there was wide diversion on some items. The Bureau estimated that 'with a capitalization of 50 percent equity and 50 percent borrowed funds, and with all products selling at market values, the rate of return on equity capital would be 11.2 percent after interest charges and income taxes,' and stated: 'Although this return is less than the average return of the petroleum industry, as indicated by published figures, it is high enough to warrant serious attention.'[47]

"In 1965 and 1966 employees of the Bureau of Mines, augmented by outside consultants with backgrounds in mining, retorting and refining techology, cost engineering, marketing, economics and finance, prepared for use in this contest a cost analysis for commercial scale oil shale plants on the contested claims for the years

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[46] G-300, p. 9; G-451, p. 29, Appendix I40.

[47] G-459, pp. ii, iii; CFF-335.

1915, 1918, 1919, 1920, and 1966. The primary purpose of the studies was to determine the prospective cost and profitability of a commercial oil shale installation at the selected points in time, based on the information available at that time, or on whatever assumptions would have been necessary and reasonable to one making such a study.[48]

"The design for the period 1915-1920 included the production of 1,000 tons of oil shale per day in an underground mine, crushing the shale, a battery of Pumpherston retorts as used in the Scottish oil shale industry, and a refinery producing shale oil gasoline, burning oil, gas oil, residual fuel oil, coke and ammonium sulfate, as well as a railroad, housing for employees and supporting facilities.[49]

"The design for the 1966 period required mining of 60,300 tons of oil shale per day in an underground mine, crushing the mined shale, retorting the crushed shale in retorts of the gas combustion type, and treating and refining the shale oil at preliminary facilities in Colorado and a refinery in St. Louis. The products of the operation would be petroleum gasoline, diesel fuel, coke, ammonia, LPG, gas and sulphur. The plant and related facilities were estimated to require a capital investment of approximately $135,000,000. The study showed the following yields after taxes.[50]

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[48] G-139, p. 182; G-290, pp. 143, 146, 172; G-665; G-666; G-667; Tr. 3126, 3263-3272.

[49] G-665, pp. 1-18.

[50] G-667, 1966 Study, pp. 1-17, 51, Table 19; G-673; G-674; G-683, G-683A; Tr. 2348, 2353-2356; CFF-337.

Project	Book Yield on Equity	Book Yield on Net Plant	True Yield
1915	7.1%	8.8%	6.5%
1918	6.6	8.3	7.0
1919	3.0	3.7	3.5
1920	Neg.	Neg.	0.0
1966	11.3	15.1	9.84

"The study indicated the following maximum payback periods:

Project	Years
1915	11.5
1918	10.7
1919	14.0
1920	18.8
1966	5.3

"The various studies disclose that since about 1951 marketable products from oil shale of the Green River Formation could be produced in a commercial-scale installation at a profit. However, that profit would be too small to be competitive with petroleum or to attract prudent investment capital. In 1966 a minimum book yield of at least 14 percent after taxes, a true yield of at least 11 percent after taxes and a payback period of not less than 4.2 years would be required on typical new investment. For nontypical investment such as an oil shale plant, a higher rate of return would be required. Required book and equity yields during the

1915 to 1920 period would probably have been higher than in 1966.[51]

"*Profitability of an Oil Shale Mine*

"As previously stated, the test of validity is whether an investor in an oil shale mine as of February 25, 1920, and since, had a reasonable prospect of developing a profitable mining operation.

"Many millions have been spent on oil shale since the revival of interest in this mineral in the early 1900's. But substantially all of the expenditures that could be considered prudent were for (1) research and development of a technically and economically feasible mining and retorting process, or (2) purchase of mining claims. Until a research program had demonstrated that shale oil could be produced at a cost competitive with petroleum, no prudent person would attempt to develop an oil shale mine. He would have no market for his product. The very fact that, in the more than half a century of interest in oil shale claims for the Green River Formation, not one profitable mine has been developed is a compelling reason for concluding that expenditure of money to that end would be imprudent. As the Department said in *United States* v. *E. A. Barrows and Esther Barrows,* 76 I.D. 299 (1969) (at p. 306):

> * * * the fact that nothing is done toward the development of a claim after its location may raise

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[51] G-683; G-683A; Tr. 2322, 2330, 2331, 2373, 2376, 2377; CFF-287; CFF-293–CFF-297; CFF-321–CFF-328.

a presumption that the market value of the minerals found therein was not sufficient to justify the expenditure required to extract and market them. See *United States* v. *Everett Foster et al.*, 65 I.D. 1 (1958), *affirmed in Foster* v. *Seaton*, 271 F.2d 836 (D.C. Cir. 1959); *United States* v. *Alfred N. Verrue*, [75 I.D. 300 (1968)].

[*Barrows* was subsequently affirmed. *Barrows* v. *Hickel*, 447 F.2d 80 (9th Cir. 1971). *Verrue* was subsequently reversed, the Court holding in effect that the presumption of invalidity raised by lack of sales had been overcome. *Verrue* v. *United States*, 457 F.2d 1202 (9th Cir. 1972).]

"The Contestees argue that the money spent or obligated in the acquisition of oil shale claims, amounting to as much as $2,000 per acre, proves that oil shale was a valuable mineral deposit and, therefore, 'open to exploration and purchase' under the mining laws. Oil shale claims derive their market value from the expectation that at some time in the future shale oil will become competitive with petroleum. Market value of a mining claim is not the test for discovery of a 'valuable mineral deposit.' The mineralization must be such, not to justify the purchase of the mining claim for possible future development, but to justify present expenditures with a reasonable prospect of developing a profitable mine. 'To allow such land to be removed from the public domain because unforeseeable developments might some day make the deposit commercially feasible can hardly implement the congressional pur-

pose in encouraging mineral development.' *Foster* v. *Seaton*, 271 F.2d 836 (at p. 838) (C.A. D.C. 1959)."

* * * * * * *

The evidence may be summarized as follows. The history of both actual and attempted oil shale operations at home and abroad has been intimately connected with the development of the liquid petroleum industry. Generally, the rise of the modern petroleum industry paralleled the decline of commercial oil shale operations.

In Scotland and France once flourishing oil shale operations have declined to essentially nothing. In both cases the demise of oil shale operations was due to increasing availability of liquid petroleum at a price which made oil shale products unattractive. In Scotland this change was apparently due to natural market forces. In France oil shale was supported far beyond the time when it could compete on its own by a government program of subsidy and import controls. In the United States the demise of oil shale operations began with the discovery of liquid petroleum at Titusville, Pennsylvania in 1859. Within a few years the domestic industry had succumbed.

Early in this century interest in the commercial exploitation of oil shale was revived. Again, the reason for this revival of interest was tied closely to the then-perceived vicissitudes of the liquid petroleum industry. With the advent of the automobile consumption of petroleum increased dramatically; it then seemed to some that the world's reserves of liquid petroleum

would be exhausted within a few years. As a result, many claims, including the claims in these proceedings, were located in the few years prior to 1920 in what the Supreme Court has characterized as a period of speculative fever. *Hickel* v. *Oil Shale Corp.*, 400 U.S. 48, 54 (1971). Innumerable attempts at achieving profitable operations were made, some on an experimental basis and some on a full-scale production basis. The result in every single case was failure to achieve a profitable operation. The reason is clear: the ultimate reduction of oil shale to oil was simply too costly to permit successful competition with liquid petroleum.

Since 1920 those principally interested in oil shale have been large oil companies and the Government. As appellees have pointed out, the large oil companies have spent several millions of dollars acquiring patented and unpatented mining claims; several millions have also been spent on research, mostly on establishing prototype operations. However, virtually no money has been expended on initiating actual commercial mining operations on these claims. One company that has attempted commercial operations on other claims (TOSCO) has failed to show either substantial production or profits. (Tr. 5063-5069).

For its part, the Government has spent several millions over the years on prototype plants and on research aimed at finding new methods of processing oil shale at a cost more favorable with the costs of the liquid petroleum industry. The Government has never developed a plant capable of commercial production.

Both the oil industry and the Government prepared

studies attempting to show with some precision the probable costs and rates of return of a hypothetical operation. The National Petroleum Council prepared a study in 1951 at the request of the Secretary of the Interior. (Ex. G-451). The conclusion of that study was that a small rate of return could have been realized, but that such return was so much less than the rate of return the oil companies could achieve on other investments at that time that an oil shale operation could not attract investment capital.

The Bureau of Mines also made a study in 1951 with some differences in the data and basic assumptions used by the National Petroleum Council. Though on some points the studies were in agreement, the Bureau of Mines study showed a substantially higher rate of return, 11.2 percent; but again, that return was less than the average rate of return in the oil industry and was therefore considered unlikely to attract investment capital. (Ex. G-459).

Another study was prepared by the Bureau of Mines specifically for these contest proceedings. The study was made for the years 1915, 1918, 1919, 1920 and 1966. (Exs. G-666, 667). Many experts in mining, engineering, and finance were consulted to determine the possible profitability of a hypothetical mining operation based on the best available methods of mining for each time period. For the 1915-1920 period the projected returns ranged from 0 percent to 7 percent. For 1966 the return was estimated at 9.84 percent on a net investment of $185,000,000. In each case the projected rate of return was found to be too low to attract investment

capital since the alternative investment opportunities available to the oil companies were far more attractive, especially considering the risks involved in initiating operations which had never succeeded before.

In the proceedings below appellant and appellees seriously questioned some of the assumptions utilized in the studies. Appellant asserts that certain by-products which increase the revenues in the 1915-1920 period could not have been sold, and consequently no profit whatever could have been realized in that period. Appellees argue that the costs for community facilities necessary to attract sufficient labor were overstated. In addition, appellant has pointed to the disparity in the results of the 1951 studies as evidence of the inherent difficulties with these hypothetical studies.

We conclude as follows. First, as a historical fact, the commercial production of oil from oil shale has never been competitive with the liquid petroleum industry. Second, the hypothetical studies at best confirm that the commercial exploitation of oil shale would not be competitive with the liquid petroleum industry. Third, without exception, every oil shale operation that has been attempted in this country has failed to show profitable production. Fourth, appellees have held these claims for half a century without attempting to exploit them.

It is unlikely that any oil shale operation could have operated at a profit at the time these claims were located or at any time up to and including the time of these contest proceedings. In so concluding, we have obviously discounted the studies which show that a

profit, however meager, could have resulted from actual operations. We do so for three principal reasons. First, the history of innumerable attempted operations admits of no other conclusion. In spite of what the hypothetical studies show, it remains an incontrovertible fact that there has never been a single oil shale operation in this country which could show profitable production.

Second, the studies themselves were not buttressed by the experience of successful commercial operations. While that in itself would not disqualify their use as evidence, it does make them heir to an infirmity which was expressed by Alfred North Whitehead in a lecture on historical foresight:

> The main difficulty * * * is the power of collecting and selecting the facts relevant to the particular type of forecast which we wish to make. Discussions on the method of science wander off onto the topic of experiment. But experiment is nothing else than a mode of cooking the facts for the sake of exemplifying the law.[52]

Third, a half century of failure to develop a single commercial operation, on these claims or any others, lends emphasis to the conclusions of the studies that whatever the rate of return, it would have been insufficient to attract investment capital in actual operations.[53]

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[52] A. WHITEHEAD, *ADVENTURES OF IDEAS* 88 (Free Press ed. 1967).

[53] If there were an actual mining operation on these claims which was earning the 9.84% return projected in the 1966 study we would

While oil shale can be found on these claims in great quantity, no attempt has ever been made to develop those deposits. Therefore, the oil shale deposits found on these claims never have been a valuable mineral deposit within the meaning of the general mining law.

In order for a commercially profitable operation to come into being there must be either a dramatic improvement in the technology or an alteration of the economic forces which have always operated in this country to prevent the commercial production of oil shale. The significant increases in national and world population, the increasing American per capita demand for energy, the diminution of available supplies and reserves of other energy sources, the complexities of international politics and economics, and the new awareness of environmental considerations, all acting in combination, may indeed soon compel consumers to accept shale oil and to pay what always theretofore would have been an exorbitant and noncompetitive price.

However, speculation that oil shale may someday be valuable in an economic sense is not evidence of its present value as of 1920 or 1966. The right to receive title to federal public land cannot be supported by such speculation. To do so would be to reject scores of case authorities which define "valuable mineral deposits" as that term is employed in the statute. 30 U.S.C. § 22 (1970).[54]

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be loath to declare the claims invalid. However, for reasons already stated, we do not believe that the studies are reliable.

[54] On November 30, 1973, the Department of the Interior an-

III. The Nature and Effect of Departmental Precedent

Between 1920 and 1960 the Department consistently recognized oil shale as a valuable mineral deposit. During that period 523 patents for 2,326 oil shale claims embracing 349,088 acres were issued. The theory upon which these claims were patented is set out in *Freeman* v. *Summers*, 52 L.D. 201 (1927).[55] The parties in *Free-*

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nounced a prototype leasing program, 38 F.R. 33186. Sealed bids were submitted and subsequently opened on January 8, 1974, and February 12, 1974. The high bid on January 8, for Colorado Tract C-A encompassing 5,089.70 acres was $210,305,600. The high bid on February 12 for Colorado Tract C-B encompassing 5,093.90 acres was $117,788,000.36. Subsequently, two tracts of comparable acreage in Utah were offered and received high bids of $75,596,800 and $45,103,200. Notwithstanding this vote of confidence in the future of oil shale as a source of oil, it must be noted that oil has not yet been produced from oil shale in paying quantities.

[55] *Freeman* was preceded by the *Instructions* of May 10, 1920, 47 L.D. 458 (1920), which stated that oil shale was a mineral of economic importance and that it was subject to location and appropriation under the mining laws, if valuable. The instructions were based in part on a letter dated May 23, 1916, from the Director, Geological Survey, to the Commissioner of the General Land Office, advising the Commissioner of the classification of certain lands. The Director stated in the letter:

"In view of the high prospective mineral value of lands underlain by oil-shale deposits it is, of course, apparent that they should not be permitted to be acquired under the nonmineral land laws. The lands have not been recommended for withdrawal because the oil-shale industry is not yet developed in the United States, and as it is desired to give opportunity for the establishment of experimental plants, it is believed the lands should remain open for the present to acquisition under the mineral-land laws, even though they are ambiguous and but poorly adapted to deposits of this type."

We would construe the 1920 Instructions as simply directing that oil shale patent applications be adjudicated on the same basis as applications based on the alleged discovery of other minerals. However, since approximately 200 patents were awarded before *Freeman* issued, such instructions were obviously construed as implicitly

man were in a position similar to that of the parties in *Castle* v. *Womble,* 19 L.D. 455 (1894). Summers had applied for patents to his homestead and stock-raising entries. Freeman and the Standard Shales Products Corporation protested on the basis that they had discovered a valuable mineral deposit, oil shale, on the same lands. That assertion was eventually sustained by the Department of the Interior. The issue in dispute in *Freeman,* from the beginning to the end of the proceedings, was not value. Rather, it was the extent to which geologic inference could be relied on to establish discovery of richer oil shale beds once thinner beds had been found.[56]

The basic substantive error in *Freeman* is its underlying assumption that possible future value for mining meets the requirement of present value:

> While at the present time there has been no considerable production of oil from shales, due to the fact that abundant quantities of oil have been produced more cheaply from wells, there is no possible doubt of its value and the fact that it con-

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recognizing the future value concept expressly enunciated seven years later in *Freeman.*

Subsequent to *Freeman* the Department and the Bureau of Land Management issued various pronouncements relating to oil shale, some implicitly and others explicitly recognizing *Freeman* v. *Summers. See, e.g.,* Departmental directive of May 1931 (Ex. G-149); BLM Monograph of April 1954 (Ex. C-317); BLM Director's Memorandum of September 9, 1957 (Ex. C-356).

[56] Basically, the mineral claimants asserted that a discovery of any part of the Green River formation was a discovery of a valuable mineral deposit, since eventually one would be lead [sic] from some thinner beds of shale to the richer ones.

> stitutes an enormously valuable resource for future use by the American people.
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> 52 L.D. at 206.

In the 102 years since enactment of the general mining law, value has always been determined upon present facts, not upon possibilities of the future. Ostensibly, the reasoning in *Freeman* with respect to future value was based on *Castle* v. *Womble, supra.* But it was stated in that case that

> * * * the requirement relating to discovery refers to present facts, and not to the probabilities of the future. In this case the presence of minerals is not based upon probabilities, belief and speculation alone, but upon facts, which, in the judgment of the register and receiver of your office, show that with further work, a paying and valuable mine, so far as human foresight can determine, will be developed.
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> 19 L.D. at 457.

The only precedent cited in *Freeman* in support of the proposition of possible future value is *Narver* v. *Eastman,* 34 L.D. 123 (1905). But *Narver* arose under the Timber and Stone Act of June 3, 1878, 20 Stat. 89 (repealed Aug. 1, 1955, 69 Stat. 434). It was not governed by the general mining law. In that case the granting of a patent to an agricultural entryman was protested by a claimant who had located the same area for building stone. The evidence clearly showed that the costs of extracting and marketing the stone far exceeded any possible revenues which might be realized

from the sale of the stone. Nevertheless, based on reasoning which may only be described as obtuse, the land was found to be valuable for building stone:

> * * * It does not follow that because there is no clear profit arising from the sale of an article that has been manufactured or produced that it has no commercial value. Take for example the farmer. In the course of husbandry it frequently happens that different crops raised by the farmer when put in market do not sell for enough to pay the costs of their production and transportation, but can it be truly said that crops have no commercial value simply because after the same have been sold and all expenses incident to their production and shipment deducted, there is no clear gain to the farmer, and therefore, as a corollary, that the lands are not valuable for agricultural purposes?
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> 34 L.D. at 125.

This was the reasoning relied on by *Freeman* for the proposition that possible future value constitutes discovery of a valuable mineral deposit. We would agree that it is prudent for a farmer to sell his crops, even if there is no clear profit, assuming, however, that the costs of planting have already been incurred and that any *additional* costs such as harvesting and transportation will be *less* than the income to be realized from the sale of the crop. But if the farmer could foresee *before* planting the crop that he could not realize a profit, we do not believe that he or any other prudent man would undertake investment on those terms. Yet that was the

case with the building stone claimants in *Narver* and with the oil shale claimants in *Freeman*. Since *Freeman* is clearly contrary to the mining law, we hold that it must be and is overruled.

Appellees argue, in effect,[57] that if *Freeman* and the policy enunciated therein are overruled, such action may only be given prospective application. They cite several lines of authority which hold that, in certain circumstances, long standing administrative interpretations of various statutes may not be overruled in a manner which would have a retroactive effect on those who have relied on the previous interpretation to their detriment. Those lines of authority may be roughly classified as follows: 1) public utility and postal rate cases, 2) decisions of this Department suggesting that new rules may be given only prospective application, and 3) administrative rulings of other agencies that changed statutory interpretations which had been followed since the enactment of the statute.

In public utility cases, after a hearing is held and a rate determined, the regulator may not later, upon the same or additional facts existing when its previous order was promulgated, require reparations of the carrier by holding that the original rate was too high

[57] Appelless argue that since *Freeman* is so firmly entrenched in the mining law it may not now be overruled. Most of the case authority cited by appellees, however, supports the proposition that precedent may be overruled, but not applied retroactively. Since appellees have also argued at length that the *Freeman* proposition of prospective value is a "rule" which may only be changed prospectively, we assume that appellees do not mean to argue that *Freeman* may not be overruled at all, only that it may not be overruled in a retroactive manner.

and should be lowered. *Arizona Grocery Co.* v. *Atchison, T. & S.F. Ry.*, 284 U.S. 370 (1932). The postal rate cases involve situations tantamount to a contract. The carriers had transported mail at the request of the Postmaster General with the fair implication that payment would be made on the accustomed basis. After the mail had been transported, changes in the interpretation of the statutes were made which lowered the rates. The Court held that to apply the lowered rates would improperly deny the carriers the higher rates that they had received for like services in the past and which they had relied on in the instant cases in undertaking to transport the mail. *United States* v. *Alabama Great Southern R.R. Co.*, 142 U.S. 615 (1892); *Luckenbach Steamship Co.* v. *United States*, 280 U.S. 173 (1930).

Both the postal rate cases and public utility decisions are inapposite, since the carriers and utilities had been actively induced by the Government to rely on certain rates. Neither appellees herein nor their predecessors in interest were similarly induced by the Government to locate these claims or to invest in their purchase or development.

The decisions of this Department advanced by appellees are equally inapposite, since they all have two characteristics in common which are not present in this case: 1) they all involved changes from one rule to another, either of which could be considered "correct" within the meaning of the statute, and 2) the original rules were in effect at the time the entries were made. Most of the cases cited concern timber culture entries, where the rule in effect at the time the entries were

made was subsequently changed, requiring a longer time period before patent would be allowed. *Mary R. Leonard,* 9 L.D. 189 (1889). In that case it was clear that either the old or the new rule would be a permissible reading of the statute. Further, the entry was made when the old rule was still in effect. For similar holdings, *see Rough Rider and Other Lode Claims,* 42 L.D. 584 (1913), which dealt with a local rule regarding discovery, and *Instructions,* 52 L.D. 631 (1929), which concerned monumenting requirements for oil shale placer claims. In this case, however, the only rule in effect at the time these claims were located and on February 25, 1920, was the prudent man test of *Castle* v. *Womble, supra,* requiring present marketability.

The other line of cases cited by appellees involves administrative changes in the interpretation of a statute from an interpretation that had been followed since enactment of the statute. For example, in *Robertson* v. *Downing,* 127 U.S. 607 (1888), customs officals attempted to reinterpret a statute contrary to the interpretation instituted shortly after its enactment. The Court stated that where a statute has been interpreted in a particular way, that interpretation should not be disturbed except for "the most cogent and persuasive reasons." *Id.* at 613. *Freeman,* however, arose more than half a century after enactment of the mining law and more than 30 years after the promulgation of the prudent man test in *Castle* v. *Womble, supra.* Moreover, *Freeman* was and is a departure from the consistent interpretation of the law by the Department and the courts.

In *Linkletter* v. *Walker,* 381 U.S. 618 (1965), the Supreme Court dealt at some length with the considerations to be weighed in determining whether to limit the effect of overruling prior decisions to prospective application only. The precise question in *Linkletter* was whether the overruling of *Wolf* v. *Colorado,* 338 U.S. 25 (1949), by *Mapp* v. *Ohio,* 367 U.S. 643 (1961), should be given retroactive effect or confined to prospective effect only. *Mapp* overruled *Wolf* to the extent that *Wolf* had held the "exclusionary rule" relating to illegal searches and seizures did not apply to proceedings in state courts.[58] The basic considerations to be weighed are found in *Linkletter* and other cases, *e.g., Chicot County Drainage Dist.* v. *Baxter State Bank,* 308 U.S. 371, 374 (1940); *Great Northern Ry. Co.* v. *Sunburst Oil & Refining Co.,* 287 U.S. 358 (1932). Those considerations include (1) the nature of the reliance placed on the precedent by the parties, (2) the purpose of the statute or rule in light of public policy, (3) the harm to the parties who have relied on the precedent to their detriment, and, conversely, (4) the harm to either the government or to the public purpose.

Neither appellees nor their predecessors in interest could have relied on the Department's policy in 1920-1960 in locating the claims herein. The *Instructions* of May 10, 1920, were issued after oil shale was removed from location on February 25, 1920.[59] *Freeman* was not

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[58] The Supreme Court was careful to observe that there is no difference between civil and criminal cases in applying the doctrine of prospective application.

[59] Appellees would contend that the claimants could well have relied on previous departmental actions and pronouncements in

issued until September 30, 1927. Moreover, locating a claim requires only a minimal expenditure. Reliance

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locating these claims. They argue at great length that classification by the United States Geological Survey of the lands upon which the claims herein are located as valuable for oil shale in 1916 imputed value requisite to support a discovery thereon. However, the meaning of "value" in the 1916 classification order is quite different from value requisite for discovery under the general mining law. The Act of July 17, 1914, 30 U.S.C. § 121 *et seq.* (1970), upon which the 1916 classification was based, and its predecessors, the Acts of 1909 (35 Stat. 844) and 1910 (36 Stat. 583), reserved to the United States certain minerals (later interpreted to include oil shale) that are classified as valuable by the U.S.G.S., when the surface is conveyed under the nonmineral land laws. Included in the reservation in each Act is "the right to prospect for, mine and remove." Since, as the Department and the courts have consistently held, a demonstration of value for prospecting or further exploration is not a demonstration of value under the general mining law, "valuable" in the Act clearly did not mean that the deposits in the lands so classified would necessarily meet the test of discovery.

Similarly, the classification of lands as valuable for oil shale by the U.S.G.S. in 1916 was based on prospective value, the prospect that at some indefinite time in the future oil shale would become marketable. The standards by which the U.S.G.S. classified lands as valuable for minerals are found in its Bulletin No. 537, published in 1913, wherein it stated as to phosphate:

> "The purely economic considerations of accessibility, means of transportation, and nearness to market are highly important in the problem of establishing a commercial mine but are not involved in the classification of the land as phosphate or non-phosphate land." (G-101, p. 128.)

Another mineral included in the 1914 Act was potash. On page 137 of Bulletin 537, under the heading "Classification of Potash-Bearing Lands," it was stated:

> "* * * as investigation by the scientists of the Government bureaus reveals promising localities, these localities, if they involve public lands, will be withdrawn from entry until their value as sources of potash can be demonstrated or disproved."

The oil shale classification orders, covering lands in Colorado, Utah and Wyoming, all stated:

or no, location by itself involves no change of position. Nor did appellees rely on the *Freeman* policy in developing their claims, since they have not in fact developed them. This leaves the question of purchase.

The Shoup claims were quitclaimed to Karl Schuyler, Sr., in 1923. D. A. Shale, Inc., received title to such claims from Schuyler's widow, who inherited them in 1933 from her husband, and who, on July 6, 1960, incorporated D. A. Shale, Inc. Therefore, there is no evidence that D. A. Shale, Inc., or its predecessors invested more than a minimal amount in the purchase of the Shoup claims in reliance upon *Freeman* or otherwise. Although Shell Oil Company expended some $18,780 in perfecting title to and preparing patent application for the Mountain Boy claims before 1964, it did not purchase the Mountain Boy Nos. 1, 6 and 7 from Frank Winegar for $30,000 *after* initiation of the contest proceedings. Moreover, the Department had not patented an oil shale claim since 1960. Accordingly, Shell could not have reasonably relied on the Depart-

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"The oil shales * * * constitute an undeveloped source of petroleum * * * and it is now recognized as possible that these shales will prove equally important as a source of nitrogen.

* * * * * * *

In view of the high prospective mineral value of lands underlain by oil-shale deposits it is, of course, apparent that they should not be acquired under the nonmineral land laws." (Ex. G-99, pp. 3, 4, 6, 7, 10, 11.)

Clearly, the 1916 classification could not be relied upon as declaring that minerals in the lands reserved, if found in sufficient quantity, were sufficiently valuable to support a discovery. The value necessary to support discovery during 1916-1920 was present economic value.

ment's continued adherence to *Freeman* when it purchased the claims.

That appellees will suffer financial harm should the claims be invalidated does not justify the perpetuation of error in interpretation of the mining law and the consequent disposition of the public lands to those not otherwise entitled to receive them. Perpetuation of such error would serve neither the mineral law nor the public interest.

Even if appellees had relied on the Department's continued adherence to *Freeman* to their detriment, the purchase of mining claims without a reasonable prospect of present, profitable development is simply a speculative venture. Preventing the disposition and dissipation of the public lands on the basis of speculation on their possible future value is a most cogent and persuasive reason for refusing to follow the policy enunciated in *Freeman*. The Secretary of the Interior has plenary authority over the disposition of the public lands. *Cameron* v. *United States,* 252 U.S. 450, 460 (1920). The Secretary's duties as trustee of the public lands for the people of the United States

> * * * oblige him to see that the law is carried out, and that none of the public domain is wasted or disposed of to a party not entitled to it.
>
> *Knight* v. *United States Land Ass'n.,* 142 U.S. 161, 181 (1891). * * *

To allow such land to be removed from the public domain because unforeseeable developments might someday make the deposit commercially feasible can

hardly implement the congressional purpose in encouraging mineral development. *Foster* v. *Seaton,* 271 F.2d 836, 838 (D.C. Cir. 1959). The obligation of the Secretary requires that claims such as those herein, which are being held for speculative purposes in the hope that at some future date the necessary technology will develop to make extraction of oil from oil shale a profitable venture, should not be patented.

In a recent District Court case, *McDade* v. *Morton,* 353 F. Supp. 1006 (D.D.C. 1973), *aff'd per curiam,* (D.C. Cir., No 73-1520, March 12, 1974), it was held that the Department of the Interior is not estopped by a former interpretation of a statute, however long-standing, from correcting what it feels to be clearly erroneous. The District Court quoted with approval *N.L.R.B.* v. *Baltimore Transit Co.,* 140 F.2d 51, 55 (4th Cir. 1944), *cert denied,* 321 U.S. 795 (1944), which held:

> * * * An administrative agency, charged with the protection of the public interest, is certainly not precluded from taking appropriate action to that end because of mistaken action on its part in the past.

See also Automobile Club of Michigan v. *Commissioner of Internal Revenue,* 353 U.S. 180, 183 (1957); *United States* v. *California,* 332 U.S. 19, 39-40 (1947).

Appellees allude to *Ickes* v. *Virginia-Colorado Development Corp.,* 295 U.S. 639 (1935), and *Wilbur* v. *United States ex. rel. Krushnic,* 280 U.S. 306 (1930). The validity of certain oil shale claims was challenged

by the Secretary of the Interior for failure to perform certain assessment work. The Supreme Court held in both cases that the claims were "maintained" within the meaning of the savings clause, section 37, of the Mineral Leasing Act of 1920, 30 U.S.C. § 193 (1972). Both decisions suggested that failure to do assessment work gave the Government no ground for forfeiture, but inured only to the benefit of relocators. In *Hickel* v. *Oil Shale Corp.*, 400 U.S. 48 (1970), the Supreme Court concluded that *Krushnic* and *Virginia-Colorado* must be confined to situations which existed in those cases, *i.e.*, where there had been substantial compliance with the assessment work requirements of the mining laws, 30 U.S.C. § 28 (1970), so that "possessory title" of a claimant would not be disturbed on insubstantial grounds.

The issue of discovery was not joined in *Krushnic* or *Virginia-Colorado*. Thus, neither decision is pertinent to the disposition of the case before us. The mining claims herein were not challenged for failure to perform assessment work, but for lack of discovery of a valuable mineral deposit. Accordingly, we are not concerned with the assessment work requirements of 30 U.S.C. § 28 (1970), but with the question of discovery within the meaning of the mining laws. We hold that no discovery of a valuable mineral deposit has been established on the claims at issue herein.

Appellees' other arguments have been fully considered and are not persuasive. Since its inception the general mining law has been interpreted by this Department and the courts to require as a condition of dis-

covery that a mineral be presently marketable. Between 1920 and 1960 a different standard—possible future marketability—was applied to oil shale. Appellees contend the application of such standard was correct, but, if not, must continue to bind the Department. We reject both contentions. Application of such standard to oil shale was contrary to the mining law. Its continued application to oil shale is contrary to law and in derogation of the Secretary's responsibility as trustee of the public lands for the people of the United States.

Accordingly, pursuant to the authority delegated to the Board of Land Appeals by the Secretary of the Interior, 43 CFR 4.1, the decision of Administrative Law Judge Dent D. Dalby is reversed, and Mountain Boy Nos. 6 and 7 placer mining claims, and Harold Shoup Nos. 1, 2, 3 and 4 placer mining claims are declared null and void.

NEWTON FRISHBERG
Chief Administrative Judge

We concur:

MARTIN RITVO
Administrative Judge

DOUGLAS E. HENRIQUES
Administrative Judge

APPENDIX F

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Office of Hearing Examiners
4209 Federal Building
Salt Lake City, Utah 84111

April 17, 1970

DECISION

UNITED STATES OF AMERICA, *Contestant* v. FRANK W. WINEGAR, *Contestee* SHELL OIL COMPANY, *Intervenor*	COLORADO 359, involving the Mountain Boy Nos. 1, 6 and 7 placer mining claims, situated in NE¼ Sec. 13; N½NW¼, SE¼NW¼. Lot 1 and Tract 105A Sec. 14; and E½SW¼, Lots 2, 3 and Tract 105B Sec. 14, T. 7 S., R. 97 W., 6th P.M. Garfield County, Colorado.
UNITED STATES OF AMERICA, *Contestant* v. D. A. SHALE, INC., *Contestee*	COLORADO 360, involving the K. C. Schuyler Nos. 2 and 3, and the Harold Shoup Nos. 1, 2, 3 and 4 placer mining claims, situated in the NE¼, and NW¼ Sec. 24, SE¼, NE¼, NW¼ and SW¼ Sec. 23, T. 7 S., R. 97 W., 6th P.M., Garfield County, Colorado.

STATEMENT OF THE CASE

The Colorado Land Office Manager issued, on behalf of the United States of America, two complaints dated September 8, 1964, alleging the invalidity of:

> The Mountain Boy No. 1 placer mining claim, consisting of the northeast quarter of section 13; the Mountain Boy No. 6 placer mining claim, consisting of the north half of the northwest quarter, the southeast quarter of the northwest quarter, lot 1, and Tract 105A of section 14; and the Mountain Boy No. 7 placer mining claim, consisting of the east half of the southwest quarter, lots 2 and 3, and Tract 105B of section 14, all in Township 7 South, Range 97 West, 6th Principal Meridian, Garfield County, Colorado; and
>
> The K. C. Schuyler No. 2 placer mining claim, consisting of the northeast quarter of section 24; the K. C. Schuyler No. 3 placer mining claim, consisting of the northwest quarter of section 24; the Harold Shoup No. 1 placer mining claim, consisting of the southeast quarter of section 23; the Harold Shoup No. 2 placer mining claim, consisting of the northwest quarter of section 23; the Harold Shoup No. 3 placer mining claim, consisting of the northwest quarter of section 23; the Harold Shoup No. 4 placer mining claim, consisting of the southwest quarter of section 23, all in Township 7 South, Range 97 West, 6th Principal Meridian, Garfield County, Colorado.

Both complaints contain identical charges that:

A. Valuable minerals were not found within the limits of the Claims on or before February 25, 1920, or subsequent to February 25, 1920, as a result of diligent prosecution of work leading to a discovery on February 25, 1920, and thereafter continued, so as to constitute a valid discovery within the meaning of the mining law.

B. If a valid discovery was made on or before February 25, 1920, or subsequent to February 25, 1920, as a result of diligent prosecution of work leading to a discovery on February 25, 1920, and thereafter continued, the discovery was subsequently lost and the lands within the claims reverted to and became a part of the vacant unappropriated public domain.

C. Valuable minerals do not now exist within the limits of the claims so as to constitute a valid discovery within the meaning of the mining law.

The complaint against the Schuyler and Shoup claims contained the additional charge that:

D. By additional or amended location certificates dated August 10, 1923, the boundaries of the claims were changed to include land which was not embraced within the claims on February 25, 1920, and to exclude land which had previously been embraced within the claims. The claims are null and void as to all lands that were not

> embraced within the claims on February 25, 1920, and are null and void as to all lands that were excluded from the claims by the additional or amended location certificates.

The complaints requested that the claims be declared null and void and the mineral entries be canceled.

On October 7, 1964, Contestee D. A. Shale, Inc., filed an answer to the complaint denying that the Schuyler and Shoup mining claims were not valid mining claims. Contestee Frank W. Winegar, having received an extension of time in which to respond, filed an answer to the complaint on November 9, 1964, denying that the Mountain Boy Nos. 1, 6 and 7 placer mining claims were not valid mining claims.

On November 9, 1964, the Shell Oil Company filed a motion to intervene because it had acquired the Mountain Boy claims by assignment from Contestee Frank W. Winegar. Permission to intervene was granted on the same date.

On February 24, 1967, Contestee Frank W. Winegar and Intervenor Shell Oil Company moved to amend the answer to the complaint against the Mountain Boy claims to include affirmative defenses. Contestee D. A. Shale, Inc., filed a similar motion for the Shoup and Schuyler claims on March 1, 1967. The motions to amend were granted on March 9, 1967.

Because of the identity of issues and the proximity of the claims, the cases were joined.

The hearing on the complaints and answers was commenced on June 20, 1967, at Denver, Colorado, and con-

cluded on October 13, 1967. A further hearing was held on November 20, 1967, at Salt Lake City, Utah. During the proceedings, the Contestant was represented by Messrs. Robert W. Mesch, Albert V. Witham, and Lowell L. Madsen, Office of the Solicitor, United States Department of the Interior. Contestee Frank W. Winegar and Intervenor Shell Oil Company were represented by Messrs. Fowler Hamilton, Richard W. Hulbert, Donald Morgan and John Lyon, Cleary, Gottlieb, Steen & Hamilton, New York, New York, and Mr. John B. Tweedy, Tweedy, Mosley & Young, Denver, Colorado. Intervenor D. A. Shale, Inc., was represented by Messrs. Clair M. Senior and Francis M. Gibbons, Senior & Senior, Salt Lake City, Utah.

The Contestant filed post-hearing briefs (in addition to prehearing briefs) on June 3, 1968, November 5, 1968, April 8, 1969, and July 10, 1969. The Contestees filed proposed findings of fact and a post-hearing brief (in addition to prehearing briefs) on June 3, 1968, November 5, 1968, and June 9, 1969.

THE ISSUES

The parties agreed that the issues to be determined are:

1. Whether there was a valid discovery of oil shale within the limits of any of the mining claims on or before February 25, 1920.
2. Whether, if a valid mining discovery was made with respect to any of the mining claims, the discovery could have been or has been lost and, in such event, the legal consequences.

3. Whether, if a valid timely discovery was made with respect to any of the mining claims and, if the land did not subsequently revert to the public domain as a result of a loss of discovery, any of the mining claims are, at this time, supported by a valid discovery.
4. Whether, if a valid timely discovery was made with respect to the K. C. Schuyler Nos. 2 and 3 and the Harold Shoup Nos. 1, 2, 3 and 4, all or any part of the claims are invalidated by reason of amendments to the location certificates made after February 25, 1920.
5. Whether the Government is applying or seeking to apply standards of discovery as to oil shale claims at variance with those enunciated in *Freeman v. Summers* or with those applied generally in past adjudications and, if so, whether the Government is precluded from so donig.
6. The legal effect of prior proceedings, if any, involving the mining claims, or any of them.

BACKGROUND

Geographic Distribution of Oil Shale

The contested claims were located for oil shale. Oil shale is a fine-grained, laminated, sedimentary rock containing solid organic material called kerogen which, upon destructive distillation, will produce a substantial amount of oil. The kerogen is derived from deposition of aquatic plants and smaller amounts of animal life in

lakes during various geological periods. Oil shale does not contain appreciable amounts of oil.

Oil shale was deposited in a wide span of the earth's geological history from the Cambrian to recent periods. Shale deposits that yield at least 10 gallons of oil per ton occur in all of the continents. There are both high and low grade oil shale deposits in Africa of late Paleozoic and early Mesozoic age. In the Stanley Basin of the Congo, extensive deposits of oil shale of Triassic age exist in beds that aggregate about 30 feet in thickness and yield more than 25 gallons of oil per ton. There are extensive deposits in China, Israel, Jordan, Syria, Siberia, Thailand, Burma and Turkey. The oil shale resources of Asia have been estimated at 70 billion barrels in deposits that yield more than 25 gallons per ton. Deposits occur in Australia and New Zealand. The known higher grade deposits are estimated to contain 280 million barrels oil equivalent.

In Europe there are substantial oil shale deposits in the Balkan Peninsula and adjacent area, France, Germany, Great Britain, Italy, Austria, Switzerland, Luxembourg, Russia, Spain, Portugal and Sweden. The recoverable oil shale resources of Europe are estimated to contain a total of more than 30 billion barrels, mostly in shales that yield more than 25 gallons per ton. In South America, oil shale deposits are known to exist in Argentina, Brazil, Chile and Uruguay. These oil shale resources are estimated to contain 50 billion barrels of recoverable shale oil.

In the United States, deposits of oil shale of varying nature and extent have been reported in the States of

Alabama, Alaska, Arkansas, California, Colorado, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Missouri, Michigan, Montana, Nevada, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Virginia, West Virginia, Wisconsin and Wyoming. A large fraction of shale deposits of the United States contain small amounts of organic matter which will yield from one to five gallons of oil per ton on destructive distillation. These rocks have not been considered as oil shale. In addition, some sandstones, siltstones and limestones contain solid organic matter which yield very small amounts of oil. Possibly half or more of the sedimentary rock areas of the country will yield a small amount of oil. Oil shale can, therefore, be subject to several definitions. One authority defines oil shale as organic-rich shale that yields at least 10 gallons (3.8) percent of oil per ton.[1]

The oil shales of highest concentration of organic matter are in the Green River Formation of Colorado, Utah and Wyoming and the Tiglukpuk Formation in Alaska. These are the only North American oil shales in the United States in the 25 to 100 gallons per ton range. The Green River Formation shales of this grade have been estimated to contain 600 billion barrels. The Tiglukpuk Alaskan shales of similar grade have been estimated to yield 250 billion barrels.[1]

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[1] G-97, pp. 3, 10-16; Tr. 3448, 3450, 3455.
The Contestant's exhibits are designated by the prefix "G" and the Contestee's by the prefix "C." "CFF" refers to the Contestee's Proposed Findings of Fact.

[1] G-97, p. 9.

The Green River Formation is considered by geologists to have been formed in an inland lake which, at one time, covered an area of some 16,000 square miles in the States of Colorado, Utah and Wyoming. The formation resulted from lake and stream depositions extending over a period of some eight to ten million years. During the course of the evolution of the Green River Formation, tuff beds were formed in localized areas from airborne volcanic ash. In some instances, fairly great thicknesses of tuff were deposited.[2]

The Mountain Boy Claims

The Mountain Boy Claims Nos. 1, 6 and 7 were surveyed in 1917 in 160-acre legal subdivisions. The location certificates were recorded February 6, 1918, showing location on January 8, 1918, by the same eight locators for each of the three claims.[1]

H. A. Quigley, one of the locators, was the moving or managing party in obtaining the location. Because of his mistaken view that the claims were forfeited due to lack of assessment work in 1918, relocation certificates were recorded January 1, 1919, showing the date of relocation as January 1, 1919, by eight locators, three of whom did not appear in the 1918 location certificates.[2] Seven of the locators conveyed their interest in the claims to Quigley by quitclaim deed dated January 17, 1920.[3]

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[2] Tr. 83, 86; CFF-1; CFF-10.

[1] G-70, abstract entries 9, 14, 15; C-311D; C-311M; C-311N, pp. 9, 11, 19; CFF-460; CFF-462; CFF-463.

[2] G-70, abstract entries 27, 32, 33.

[3] G-69; G-70, abstract entries 38, 39, 40; C-311N, pp. 9, 11; CFF-464; CFF-465; CFF-471.

In April 1920, Quigley conveyed the claims to Herbert N. Wright for $5 per acre.[4] The eight locators shared in the proceeds. Wright acquired the Mountain Boy claims, as well as others, as trustee under a business trust for 24 beneficiaries with power to develop patent, leases, or sell the claims. John T. Brierly succeeded Wright as trustee. The beneficiaries contributed $25,000 to the trust in 1920 and additional sums in subsequent years for assessment and patent work.[1]

Brierly filed a patent application for the Mountain Boy claims Nos. 1 through 8 on July 24, 1924. On November 7, 1924, the Mountain Boy application was "suspended pending completion of resurvey." On March 3, 1927, the resurvey plat was officially filed in the local land office. Publication of the patent application was completed on August 27, 1927. No "adverse claim" was filed.[2]

During 1924, 1925 and 1926, investigations of the Mountain Boy claims were conducted by two inspectors of the General Land Office. A complaint was issued on May 21, 1927, seeking cancellation of the entries. The complaint charged, among other things, that no discovery had been made on Mountain Boy No. 1. An answer denying the allegations of the complaint was filed on September 14, 1927.[3]

On January 17, 1928, an amendment to the complaint

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[4] G-70, abstract entry 44.

[1] C-311AA; C-311I, pp. 3, 4, 116; C-311M; C-311N, p. 10; CFF-472; CFF-473.

[2] G-29A, sheet 2 of Plat of Resurvey; C-311I; C-311J, p. 1; C-311T; Tr. 1096; CFF-480; CFF-481; CFF-482; CFF-484.

[3] C-311L; C-311N; C-311R; C-311S, p. 1; C-311CC, pp. 4, 5; CFF-485; CFF-487; CFF-488; CFF-489; CFF-492; CFF-546.

added the charge that the NE¼, W½NW¼, NW¼NW¼, NE¼SE¼ section 14, T. 7 S., R. 97 W., 6th Principal Meridian, was claimed, possessed and occupied in good faith by Walter H. Pritchard under the homestead laws and, except as to certain minerals, had not been abandoned or relinquished to the United States.[1]

At the request of the mining claimants, the case was determined without hearing on the basis of the record, including the confidential field reports. The Commissioner of the General Land Office issued a decision on June 4, 1934, finding that a discovery had been made on Mountain Boy No. 1. The decision left open the charge concerning the Pritchard homestead entry with the understanding that the mining claimant might submit a petition for reconsideration of the charge. On May 21, 1937, the patent application was rejected to the extent that it covered lands previously patented to Pritchard.[2]

By 1939, William R. Eaton had acquired ownership of the Mountain Boy claims through a quiet title proceeding. He died sometime prior to February 1, 1943. On September 24, 1945, the Commissioner of the General Land Office rejected the patent application "as a considerable time has expired since the final rejection of exchange application 051139 of William R. Eaton and no further action has been taken by or in behalf of the mineral applicant since such rejection."[1]

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[1] C-311W; CFF-490; CFF-491.

[2] C-311CC; C-311II; C-311JJ; CFF-493; CFF-499; CFF-501; CFF-502.

[1] G-70, abstract entries Nos. 63 and 64; C-311QQ; C-311RR, p. 2; CFF-508; CFF-510; CFF-514; CFF-516.

In 1956, Winegar undertook to purchase and confirm possessory title to the claims and to use due diligence to obtain patents for Shell. Shell agreed to buy the claims upon issuance of patent for $60 per acre and reimbursement of expenses up to $12,800. Winegar obtained title to the Mountain Boy claims and filed patent applications with the Bureau of Land Management on August 7, 1958. Shell purchased the claims from Winegar in 1964 for $30,000. Shell had previously, in 1962, obtained through Winegar the Pritchard homestead for $8,400.[2]

After a field examination, a Bureau evaluation engineer recommended in a report of December 14, 1959, that patents be issued for Mountain Boy Nos. 1, 6 and 7. Publication of notice of the application was effected and final proof submitted along with the purchase price. A final certificate was issued by the Bureau of Land Management on November 30, 1960. On March 21, 1961, the final certificate was approved for patent by R. W. Bennett, Minerals Adjudicator of the Bureau. The Colorado State Office, Bureau of Land Management, sent the application to the Director for issuance of patent. A patent was not issued. Instead, this proceeding against Mountain Boy Nos. 1, 6 and 7 was initiated.[1]

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[2] G-69; G-70; G-514, November 9, 1964 letter between Shell and Winegar; C-312R, p. 1; C-749; C-757; C-758; CFF-527; CFF-529; CFF-532; CFF-534; CFF-541.

[1] G-29A, Tract Book, p. 197; C-312E; C-312F; C-312G; C-312H; C-727; C-884, p. 1; CFF-535; CFF-537; CFF-538; CFF-540; CFF-545.

The Shoup and Schuyler Claims

The K. C. Schuyler Nos. 2 and 3 were originally located by eight individuals in 160-acre legal subdivisions on July 26, 1917. The location certificates were recorded on August 25, 1917. The Harold Shoup Nos. 1, 2, 3 and 4 were originally located by eight individuals in 160-acre subdivisions on September 29, 1917. The location certificates were recorded on October 27, 1917. New location certificates covering the Schuyler and Shoup claims were again recorded on January 21, 1919, showing the date of location as January 1, 1919.[1]

S. D. Crump acquired the Shoup and Schuyler claims and quitclaimed them to Karl C. Schuyler, Sr. on May 24, 1923. A week later Schuyler quitclaimed an undivided one-half interest to George A. Taff. On September 21, 1923, Schuyler and Taff filed "Additional or Amended Location Certificates" dated August 10, 1923, for each of the claims.[2]

The additional or amended location certificates attempted to change the K. C. Schuyler No. 2 from its original designation as the NE^4 section 24, to the $N^2N^2N^2$ sections 23 and 24; the K. C. Schuyler No. 3 from its original designation as the NW^4 section 24, to the $S^2N^2N^2$ sections 23 and 24; the Harold Shoup No. 1 from its original designation as the SE^4 section 23, to the N^2S^2 section 23; the Harold Shoup No. 2 from its original designation as the NE^4 section 23, to the $N^2S^2N^2$ sections 23 and 24; the Harold Shoup No. 3 from its

[1] G-28, pp. 142, 149, 150; CFF-341.

[2] G-28, pp. 107-113, 118, 119; CFF-341; CFF-342.

original designation as the NW¼ section 23, to the S½S½N½ sections 23 and 24; and the Harold Shoup No. 4 from its original designation as the SW¼ section 23, to the S½S½ section 23.

George A. Taff reconveyed his undivided one-half interest in the claims to Karl C. Schuyler, Sr., by quitclaim deed dated January 9, 1926.[1]

Karl C. Schuyler, Sr. died testate on July 31, 1933. The Shoup and Schuyler claims were distributed to the surviving widow who, on July 6, 1960, incorporated D. A. Shale, Inc. under the laws of the State of Colorado, to which possessory title to the claims was transferred. On September 29, 1960, D. A. Shale, Inc. filed an application for patent of the Schuyler and Shoup claims. The Contestant thereafter filed its complaint contesting the validity of the claims.[2]

STATUTORY PROVISIONS

Section 1 of the Act of May 10, 1872, 17 Stat. 91, 30 U.S.C. 22, provides:

> . . . all valuable mineral deposits in lands belonging to the United States, both surveyed and unsurveyed, are hereby declared to be free and open to exploration and purchase, and the lands in which they are found to occupation and purchase . . . .

Section 6 of that Act, 17 Stat. 92, 30 U.S.C. 29, states:

> . . . a patent for any lands claimed and located for valuable deposits may be obtained . . . .

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[1] G-28, p. 103; CFF-343.

[2] G-27; G-28; C-971, pp. 1, 2; CFF-344; CFF-346; CFF-347; CFF-440; CFF-443.

Section 1 of the Act of February 25, 1920, 41 Stat. 437, 30 U.S.C. 181, states:

> Deposits of . . . oil shale . . . and lands containing such deposits owned by the United States . . . shall be subject to disposition in the form and manner provided by this Act . . . .

Section 21 of that Act, 30 U.S.C. 241, provides:

> The Secretary of the Interior is hereby authorized to lease to any person or corporation qualified under this act any deposits of oil shale belonging to the United States . . . .

The Mineral Leasing Act of February 25, 1920, withdrew oil shale from appropriation under the mining laws, except as to valid mining claims existing on the date of the act.

OIL SHALE AS A VALUABLE MINERAL DEPOSIT

(Issues Nos. 1 and 3)

The Test of Discovery

The Contestant asserts that oil shale was not, prior to February 25, 1920, a valuable mineral nor has it since become so.

The test of the discovery of a valuable mineral deposit was laid down in the Secretary's decision in *Castle v. Womble,* 19 L.D. 455 (1894). There the Secretary stated (at p. 457):

> After a careful consideration of the subject, it is

> my opinion that where minerals have been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success, in developing a valuable mine, the requirements of the statute have been met.

This "prudent-man rule" has been approved by the Supreme Court on several occasions. *Chrisman v. Miller,* 197 U.S. 313, 332 (1905); *Cameron v. United States,* 252 U.S. 450, 459 (1919); *Best v. Humboldt Placer Mining Co.,* 371 U.S. 334, 335-336 (1963).

This test of a valuable mineral deposit is defined in more direct terms in *Deffebach v. Hawke,* 115 U.S. 392 (1885) as minerals "in such quantity as to justify expenditure to extract them" and, similarly, in *Davis v. Wiebbold,* 139 U.S. 507 (1891), as mineral "in such quantities as would justify expenditures in the effort to obtain it." In *Diamond Coal and Coke Company v. United States,* 233 U.S. 236 (1914), the Court defined mineral lands as lands containing "mineral deposits of such quality and in such quantity as would render their extraction profitable and justify expenditure to that end."

More recently, in *United States v. Alfred E. Coleman,* 390 U.S. 599 (1968), the Court approved the application of the "marketability test" as "an admirable effort to identify with greater precision and objectivity the factors relevant to a determination that a mineral deposit is 'valuable'." In that case the Court stated (at p. 601):

> We cannot agree with the Court of Appeals and believe that the rulings of the Secretary of the Interior were proper. The Secretary's determination that the quartzite stone did not qualify as a valuable mineral deposit because the stone could not be marketed at a profit does no violence to the statute. Indeed, the marketability test is an admirable effort to identify with greater precision and objectivity the factors relevant to a determination that a mineral deposit is "valuable." It is a logical complement to the "prudent man test" which the Secretary has been using to interpret the mining laws since 1894. . . . Congress has made public lands available to people for the purpose of mining valuable mineral deposits and not for any other purpose. The obvious intent was to reward and encourage the discovery of minerals that are valuable in an economic sense. Minerals which no prudent man will extract because there is no demand for them at a price higher than the costs of extraction and transportation are hardly economically valuable. Thus, profitability is an important consideration in applying the prudent-man test, and the marketability test which the Secretary has used here merely recognizes this fact.

The question is, then, whether as of February 25, 1920 and since, "a person of ordinary prudence would be justified in the further expenditure of his labor and means," on the contested mining claims, "with a rea-

sonable prospect of success, in developing a valuable mine" *(Castle v. Womble, supra),* and whether the product of the mines could be marketed at a profit *(United States v. Alfred E. Coleman et al., supra).*

Past Action as Measure of Prudence

A half-century has elapsed since these claims were first located. During that period a great amount of activity has occurred and substantial amounts of money have been expended in connection with oil shale. An analysis of that activity should disclose what expenditure by men of ordinary prudence would be justified and what reasonable prospects existed for developing a valuable mine.

The Contestees argue that the determination of what "men of ordinary prudence" would be justified in doing should be made "in the light of the perceptions of the time when the acts of location and discovery occurred."[1] They would prefer to have the judgment made on the basis of what men of prudence might then have believed important under the patterns of thought and business conduct followed at that time. In short, subsequent unforeseeable events or hindsight should not be considered. The Department has adopted the view that a mining claimant's acts or failure to act subsequent to an alleged discovery should be considered in determining whether expenditures to develop a profitable mine would be justified. Thus, a failure to expend money over a considerable period of time in an effort to develop a mine has been considered as evidence

[1] Contestees' Opening Brief, p. 29.

that the mining claimant regarded such expenditures as imprudent.

In *United States v. Ruddock, Metson v. O'Connell et al.,* 52 I.D. 313 (1927), the issue was whether the evidence of deposits of petroleum found by mining claimants prior to the withdrawal of the lands from mineral entry in 1910 was sufficient to constitute a valid discovery. The Department held that it was not, stating (at p. 322):

> Certainly the subsequent acts of the mineral claimants, in abandoning all further development, permitting the improvements to go to ruin or to be sold, the property to lie idle, the possession to be taken under the agricultural land laws, and in never resuming development work, are very persuasive that they entertained the same view as their superintendent as to the inadvisability of attempting to produce oil from the strata of oil sands reached in any of the wells.

In *H. Leslie Parker et al.,* 54 I.D. 165 (1933), the Department stated (at p. 170):

> . . . The evidence shows that the actual disclosures of oil or gas in the three first wells are negligible and inconsequential. The conduct of the claimants and their lessee thereafter convinces the Department that they were in no wise induced by what they saw or found in the Shannon sands to rely upon them as a discovery or to expend further time or money in the hope of developing therein oil or gas in commercial quantities.

In *Starks v. Mackey et al.*, 60 I.D. 309 (1949), the mining claimant alleged discoveries of oil before the lands were withdrawn from mineral entry under the Mineral Leasing Act of 1920. There the Department stated (at p. 313):

> No evidence at all was presented by Mrs. Starks to show that the shale encountered in the wells drilled on Blue Bird Nos. 12, 15, 18, and 19, has any value for oil. On the contrary, the fact that the shale is only 3 feet thick and is underlain by dirt indicates that the shale has no economic or commercial value. Certainly, if the minerals discovered on these claims were of sufficient value that a person of ordinary prudence would be warranted in the expenditure of further time and money to develop the claims, some effort would have been made to develop them during the years that have elapsed since the date of the alleged discoveries, February 11, 1920.

And in *United States v. Vernon O. and Ina C. White*, 72 I.D. 522 (1965), the Department stated (at p. 526):

> The incredibility of the appellants' contention that they have made a discovery is perhaps most clearly pointed out by the testimony they elicited from their own witnesses that in 1923 and 1924 there existed on the claims mineral deposits that could have been developed by a prudent person with a reasonable prospect of success (Tr. 97, 135-136, 204-205). If this were so, it passes belief that in the 38-39 years elapsing until the hearing appel-

> lants mined only 6 ounces of gold. How long were they going to wait before commencing a mining operation, and, more importantly, why were they waiting? The answer seems plain—that they have not yet found any values sufficient to warrant development.

In each of these cases, the Department considered events occurring subsequent to an alleged discovery or hindsight in arriving at its conclusions. The courts have approved.

In *Oregon Basin Oil & Gas Company v. Work,* 6 F.2d 676 (1925), the Court of Appeals for the District of Columbia Circuit held that the Secretary "properly considered" events occurring after the alleged discoveries in invalidating an oil and gas claim relocated in 1912, shortly before a withdrawal of the lands in 1914. The Court stated (at p. 678):

> . . . In reaching his decision the Secretary properly considered, not only the work actually done in 1912 and 1913, the fact that no further discovery was made or attempted prior to the application for patent, almost 9 years thereafter, that the oil from adjacent claims was subsequently discovered at a depth much greater than that of the deeper of appellant's two wells, and from formations found by the Secretary to have been wholly unconnected with the formations penetrated by the well of appellant, and all other surrounding circumstances.

In *Cameron v. United States,* 252 U.S. 450 (1920),

the question presented was whether the claim had been perfected by a valid discovery of a valuable mineral deposit prior to a withdrawal. The Supreme Court affirmed the Secretary's decision and quoted from it (at p. 457):

> The evidence wholly fails to show that there are veins or lodes carrying valuable and workable deposits of gold, silver, or copper, or any other minerals within the limits of the locations. Sufficient time has elapsed since these claims were located for a fair demonstration of their mineral possibilities. [Six years had elapsed from location date to hearing date.]

As the Department has stated in *United States v. Flurry*, A-30887 (March 5, 1968):

> . . . the most persuasive evidence as to what a man of ordinary prudence would do with a particular mining claim is what men have, in fact, done or are doing, not what a witness is willing to state that a prudent man would do.

Foreign Oil Shale Activity

Oil shale development in foreign countries stimulates interest in the possible development of Western United States shales and has relevance in determining what expenditures might prudently be made in the United States. Several of the foreign deposits have been commercially exploited.

Production of fuels from oil shale preceded the production from petroleum. Shale oil was first produced

in France in 1838. Subsequent oil shale operations were started in Scotland in 1850; Australia in 1865; Brazil in 1891; Germany in 1916; Sweden and Estonia in 1921; Spain in 1922; Manchuria in 1929; and South Africa in 1935. A number of these continued until recent years when they succumbed to economic pressures from the petroleum industry. Today, only the Estonian and Manchurian operations survive.[1]

In France, the shale oil industry grew until about 1864 when competition of imported petroleum caused a decline. The French Government, at least intermittently, provided support of one kind or another, such as imports duties on foreign petroleum or direct subsidies. In 1893, oil shale production was about 190,000 tons. By 1900, production reached 220,000 tons, increased to 500,000 tons during World War II, and then declined. The industry ceased in the early 1960's.[1]

The Scottish industry used oil shale, recovered by underground mining, which assayed generally in the range of 25 to 35 gallons per ton. After 1850, more than 140 companies and individuals engaged in oil shale ventures. By 1870, these were reduced to 51, and by 1910 only six companies remained. By 1920, the operations were consolidated under one parent company, Scottish Oil Ltd. The Scottish oil shale production in the early 1870's was approximately 500,000 long tons per year and reached 3,000,000 tons annually by 1910. Production thereafter gradually declined to essentially nothing in 1964.[2]

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[1] G-290, pp. 29, 39; C-479, pp. 109, 110, 111; C-1025; CFF-45.
[1] G-281, p. 15; G-290, pp. 25, 26; G-419, p. 50; C-1025, pp. 1, 2.
[2] G-290, pp. 29, 30, 32; G-419, p. 56, 57.

Oil Shale Activity in the United States

The oil shale industry in the United States started about 1850. By 1860 there were 53 companies producing oil by distillation of various bituminous substances, including oil shale. Natural petroleum was discovered at Titusville, Pennsylvania, in 1859 and the American petroleum industry came into being. This reduced the price of kerosene so much that oil shale operations became unprofitable. The plants were abandoned or adapted to petroleum refineries.[1]

Interest in oil shale revived in the 1910 to 1920 period and has continued to the present time.[2]

An examination of how prudent persons expended their means with respect to oil shale during this period will provide the guide in determining whether oil shale was, as of February 25, 1920, a valuable mineral. Because the evidence in this respect is massive, the examination is limited to some corporations and the Government, whose activities are directed by the composite judgment of experienced officers.

Robert M. Catlin, a businessman and a member of the American Institute of Mining and Metallurgical Engineers, between 1890 and 1915 purchased approximately 140 acres of oil shale land, leased approximately 480, and obtained an interest in 140 acres of unpatented mining claims. He visited Broxburn, Scotland, in 1901 to study the Scottish shale oil operation, and in 1914 began research and development with the Elko deposits. In 1915, a 100-foot shaft was sunk in his min-

[1] G-290, pp. 60, 61; C-419, p. 99; C-721, pp. 38-39; C-853, p. 151; CFF-288.

[2] C-721, pp. 39-45.

ing property. The following year he erected a 20-ton per day retort which proved unsatisfactory and was later dismantled. In 1917, he incorporated the "Catlin Shale Products Company" and transferred his oil shale land to the company for stock.[1]

In 1918, the company began the construction of eight 100-ton per day retorts which differed in design from the 1915 models. The retorts were in operation in May of 1919 and by July the new plant had produced 15,000 gallons of shale oil. A refrigerator plant, wax press, stills and agitator were added to the plant the latter part of 1919 and early 1920. Sometime later, probably in 1920, the Catlin Company's retorts were shut down. A third retort, 40 feet high and 12-½ feet in diameter, was constructed and put in operation in December of 1921. This retort was operated intermittently until October 18, 1924.[1]

In 1924, the shale oil products were offered for sale for the purpose of testing the market. The products apparently could not be marketed in competition with petroleum products. On December 23, 1930, the Company was dissolved. Its operation was admittedly experimental.[2]

The Oil Shale Mining Company was incorporated in

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[1] G-23, p. 101; G-722, Part 1, pp. 9, 10, 12, 17, 18; G-722, Part II, p. 30; G-724E; G-724G, Lease No. 4349; G-724I, pencil notes of R. M. Catlin, Sr.; G-724N, Deeds 276-F, 278-F and 384-F; CFF-57; CFF-58; CFF-105.

[1] G-722, Part I, pp. 19, 20, 43; G-724H, Catlin letter, May 19, 1919; G-724J, letters of October 13, 1919 and December 2, 1919; CFF-78.

[2] G-722, Part I, pp. 13, 40, 41; G-722B; G-724B; G-724J, letter by R. M. Catlin dated August 8, 1919.

Colorado on October 2, 1916, as a public stock company with a capitalization of $100,000. It acquired six mining claims about 15 miles west of DeBeque, Colorado. In 1916, the company built a bunkhouse and a cookhouse near the claims. In 1917, the buildings were moved to a new location and an externally heated, six to eight-ton per day batch-type Henderson retort, 18 feet high and 12 to 15 inches in diameter, and a tramway were constructed. By the end of 1918 or the early part of 1919 the company had six of these retorts, only one of which was assembled and operated on an experimental basis. By 1920, the company experimented with a continuous type of retort, invented by its superintendent, A. V. Young, which was subsequently abandoned.[1]

The company produced a few barrels of oil in 1920 and 30 barrels in 1921. Oil shale for the retorts was obtained from small pits on the claims during the period from 1917 to 1921. By 1926, the company lost its properties through attachments.[2]

The Monarch Shale Oil Company was incorporated in October 1919. The corporation acquired 240 acres of oil shale land, located about 13 miles northeast of DeBeque, Colorado. By April 1921, the company had erected a Ginet retort (named after its inventor and president, Joseph H. Ginet), 18 to 25 feet long and 3-½ feet in diameter, with a capacity of about 50 tons of shale per day. During 1921, the plant was operated on 11 or 12 occasions for short periods and produced

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[1] G-115, pp. 4, 6, 7, 14, 15, 20, 27, 40, 47, 114, 115, 130-133, 139; G-241, p. 30.

[2] G-115 pp. 28, 40, 113-118, 130; G-241, p. 30; CFF-57.

a total of 71 barrels of shale oil. The retort was "not run to any extent" during 1922 and was not operated at all during 1923. Some test runs were made in 1924. The shale for charging the retort was taken from a tunnel driven 75 feet into the side of the cliff above the plant.[1]

The Mount Logan Shale Mining and Refining Company was incorporated in Colorado in July 1917. It obtained seven unpatented mining claims located about five miles from DeBeque, Colorado, on Mount Logan. The company erected a plant in Western Colorado in 1918, using three Galloupe retorts of a 20-ton capacity per day. After test runs in 1919 and 1920 proved this retort to be unsatisfactory, the company erected a Simplex retort similar to the Galloupe. The Simplex was 21 to 30 feet long and about 3 feet wide with a capacity of about seven tons, producing 12 to 15 barrels a day. The company obtained its shale from a 100-foot tunnel into the cliff. The total cost of the plant was estimated at approximately $70,000. The corporation made some experimental runs of oil shale in 1920 and 1921. The company became defunct in October 1926.[1]

The Index Shale Oil Company was incorporated in Colorado in October 1920. It obtained possessory title to eight oil shale claims and equitable ownership in an additional 15 others. Index began constructing an experimental plant in 1920 about 15 miles northwest of

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[1] G-116, pp. 4-8, 14, 20, 48, 67, 70, 71, 80, 86, 93, 101, 106, 119, 120; C-212.

[1] G-61, No. 8; G-117, pp. 1, 7, 9, 10, 12, 15, 19, 20, 24, 31, 32, 34, 59, 61, 75, 89, 99-102, 118, 143, 145; G-168, p. 21; C-213, p. 326; C-455; C-457; C-959, pp. 31, 32; CFF-80, CFF-106.

DeBeque, Colorado, using the Brown retort invented by its largest stockholder, Harry L. Brown. The retort was 75 feet long, two and one-half feet in diameter. Experimental runs of oil shale indicated that changes in design and equipment were necessary. Additional equipment was added in 1926. In 1928 the company was in receivership. The corporation mined its shale from a tunnel driven 60 feet into the face of the cliff.[2]

The March Oil Company was incorporated in August 20, 1917, in the State of Colorado by a group of businessmen, including K. C. Schuyler. The company's mining property, consisting of about 2,400 acres of oil shale, was located three to four miles north of Grand Valley on Parachute Creek. In 1917 the company leased its mining claims to K.C. Schuyler who agreed to work the claims and to refine and dispose of oil shale and its products. In 1920 and 1921 Schuyler and George Taff, working for or in partnership with Schuyler, constructed a plant at a cost of $100,000. The plant consisted of some buildings and sheds, a one-and-one-half-mile tramway, crushers and engine. A retort was designed by Taff, ordered from a Wisconsin manufacturer, but never delivered. In mid-1921 a cable on the tram broke killing nine men. The plant was never completed.[1]

The Continental Oil Shale Mining Company was incorporated in Arizona in November 1920. The company

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[2] G-118, pp. 1, 2, 31, 47, 49, 51, 52, 53-130, 154, 155, 163, 165, 166, 167; G-642E, pp. 172-207.

[1] G-61, No. 18; G-125, pp. 10, 15, 19, 21, 22, 30, 43; C-972, Exs. No. 1, pp. 1, 2, No. 3, p. 1, No. 4, p. 7, and Nos. 10 and 12; C-973, p. 54; CFF-81; CFF-353; CFF-358; CFF-362.

obtained mining claims by merger with the Oil Development Company. In 1919, it constructed a plant, 20 miles north of Rifle, Colorado, on Piceance Creek, consisting of a bunkhouse, a residence for a superintendent, a blacksmith shop, a crusher, and a Colorado continuous retort, invented by two Denver engineers. The vertical retort was about 22 feet high and two feet in diameter, having a capacity of 50 tons of shale per day.[2]

Shell Oil Company became interested in oil shale by 1945. By August 1954, Shell had acquired 3,624 acres of oil shale property at a cost of $123,014.35. Shell continued to acquire oil shale lands. In 1965, it entered into an option to purchase the Cathedral Bluff claims in the Piceance Creek Basin. The options on these 21,000 acres specified a purchase price of $2,000 an acre. The total cost to Shell would be in excess of $43,000,000, including $1,000,000 as the cost of maintaining the option. In the span of 10 to 15 years, the price of oil shale lands to Shell had risen from 500 to 700 percent and in the two years prior to 1964 had risen as much as 250 percent. As of 1964, Shell's holdings consisted of 5,300 acres of fee property, options to purchase 3,300 acres of fee lands and options to purchase 24,400 acres of unpatented mining claims. During the period of acquisition of the oil shale claims, Shell made economic studies of the feasibility of ex-

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[2] G-61, No. 13; G-126, pp. 35, 44, 70, 71; G-168, p. 15; G-580, LL-4, p. 1-16; C-454, p. 4.

tracting and refining oil from oil shale, but has no current plans for mining and processing oil shale.[1]

Cities Service Company, through its subsidiary Empire Gas & Fuel Company, began locating oil shale claims in Sweetwater County, Wyoming, in 1918. By August 1923, the company asserted ownership in 48 claims, totaling 7,680 acres of oil shale land. The evidence does not indicate whether Cities Service Company presently asserts title to these early locations.[1]

In early 1951, Cities Service Oil Company, a subsidiary of Empire Gas & Fuel Company, acquired an option to purchase 8,300 acres of oil shale land at $50 per acre, which it exercised in 1953. Since 1952, Cities Service Oil Company has acquired about 10,000 acres of oil shale land in Garfield County, Colorado, at a cost of about $500,000. Other than the acquisition of oil shale properties, Cities Service Oil Company's activities have been limited to core drilling and testing of oil shale samples. The company has no program for the commercial development of oil shale.[2]

Standard Oil Company of California began investigating the possibilities of producing shale oil and refined products from oil shale in 1918. The investigation included geological examination of the oil shale in California, Nevada, Utah and Colorado, the "devices for utilization" of them, and an economic analysis of the possible profitability of doing so. Laboratory retorting

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[1] G-509, p. 31; G-514, pp. 31, 80, 81; C-741; Tr. 4815, 4816, 4844, 4848, 4916; CFF-318.

[1] G-636E, pp. 60, 111, 116, 129; G-636F, pp. 11, 16; CFF-11.

[2] G-636, pp. 7, 8, 9, 10, 12, 30; G-636F, pp. 18, 23, 24; CFF-314.

experiments were conducted in 1920 and from 1925 to 1928. In 1921, the company obtained a patent for its process of "hydroxination of oil shale" developed by its research. In 1925, the company made intensive studies on the extraction of oil from solids.[1]

Standard began the purchase of Colorado oil shale land in 1943. By 1954, it had acquired 39,736 acres of patented land, 8,057 acres of unpatented mining claims, and an option or a partial interest to 17,628 acres, for a total of 65,421 acres. The total cost of this acquisition was approximately $5,000,000. By 1967, the company's patented land totaled approximately 44,000 acres in blocks of sufficient size to support a commercial oil shale operation. The company is now one of the largest holders of patented oil shale land.[2]

Standard Oil Company of Ohio (Sohio) first became interested in oil shale in 1962. From 1964 through 1967 the company spent or obligated itself to spend $28,800,000 for acquisition of 43,631 acres of patented oil shale lands in the Green River Formation. In addition, the company holds interests in options which, if exercised, would entail additional investments.[1]

The Oil Shale Corporation (Tosco) interested Sohio in its retorting process. In September 1964, the two companies joined with Cleveland Cliffs Iron Company in a joint venture agreement and formed the Colony Development Corporation for the purposes, among

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[1] G-629C, pp. 4, 12, 13, 27-47, 68, 69, 75, 78, 97, 98; G-723, Part I, p. 57; C-567, p. 1; CFF-110.

[2] G-629, p. 28; G-629B; G-629D, p. 149; G-629E; CFF-311.

[1] G-604, pp. 8, 19-20; G-604A.

others, of building and operating a prototype plant to determine the economic feasibility of the Tosco II process, developing an experimental mine and making engineering and cost studies directed to the establishment of a commercial oil shale operation. Facilities, including a 1,000-ton per day prototype retort, were constructed and placed in operation in 1965. During its subsequent operations the plant produced over 50,000 barrels of crude shale oil. By June of 1966 sufficient prototype data had been obtained to enable a qualified engineer to make an order of magnitude estimate of the capital cost of a commercial plant. The estimate came out substantially higher than the studies made prior to the construction of the plant. A difference of opinion relative to the causes and solution of this problem developed between the joint venturers. Sohio and Cleveland Cliffs felt that the problems of reducing capital costs should first be solved, then the prototype redesigned and operated. Tosco wanted to operate the plant and solve the high capital cost problem simultaneously. The differences were solved in September 1966 by placing the agency company, Colony, on an inactive status, having Cleveland Cliffs continue the mining experiment for the joint accounts of the joint venturers, and permitting Tosco to continue operating the retort for its own account. If the project were successful, the joint venturers contemplated entering into a commercial operation. In accordance with the agreement, Sohio studied alternative processes for extracting oil from shale. In 1966 it agreed to an ex-

change of information with Union Oil Company after joint studies of Union's retorting process.[1]

Tosco holds an interest in over 30,000 acres of oil shale lands in Colorado and Utah acquired at a cost of about $10,000,000.[2]

Tosco's president testified that the company intends to have a commercial plant of approximately 53,000 barrels per calendar day "on stream" during 1970.[1]

Texas Oil Company (Texaco) began exploring the possibilities of oil shale in 1918, and began acquiring interests in the oil shale lands of the Green River Formation in 1927 through the acquisition of the California Petroleum Company and its subsidiary, the Colorado-Ventura Company. Since 1927, the company has acquired 29,000 acres of patented oil shale lands in Colorado and Utah at a cost of $1,500,000. From 1945 to 1947, Texaco made a refining study of oil shale for the Navy at its own expense. Beginning in 1957, after experimentation with other methods of extracting oil from shale, Texaco constructed and operated a pilot plant and developed its own "hydrotorting process for extraction of shale oil." The company has spent over $1,000,000 in oil research in the past 20 years.[2]

Mobil Oil Corporation's interest in oil shale began in 1940. A research program to evaluate the potential of shale as a source of oil was begun in 1943. A pilot plant was constructed at Paulsboro, New Jersey, and

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[1] G-604, pp. 24, 25, 26, 29, 37; G-604C; Tr. 5063; CFF-298.

[2] C-1065; CFF-316.

[1] Tr. 5069; CFF-328; CFF-332.

[2] G-642, pp. 20, 25, 26, 43-45, 51; G-642C, p. 41; G-642F; G-642G; CFF-313.

an experimental program was carried out between 1943 and 1945. Further research and study of oil shale was continued. Since 1965, the company has been conducting a research program at Anvil Points in cooperation with five other major oil companies which includes additional refining, economic and mining studies. Mobil has, since 1955, purchased oil shale lands of the Green River Formation. At the present time, it holds an undivided half interest in 24,591 acres of patented oil shale land, the entire interest in 10,131 acres of patented oil shale land, for which it paid approximately $3,000,000. It also holds an option to purchase 17,440 acres of unpatented oil shale claims and 330 acres of patented land which, if exercised, will cost an additional amount of approximately $1,800,000.[1]

Union Oil Company of California became interested in oil shale in 1920. Since 1920, the company has acquired an interest in 57,319 acres of oil shale land, of which 37,166 are patented, and a "surface only" interest in an additional 2,617 acres, at a cost of over $2,500,000. Beginning in 1924, Union conducted studies of existing oil shale processes, made analyses of oil shale samples and undertook an oil shale research program. Starting in 1944, it constructed and operated an experimental retort with a two-ton per day capacity. In 1948 it completed a scale-up model with a 50-ton per day capacity which was dismantled in 1956. Union spent a total of $438,000 on oil shale research from 1947 to 1954. On January 31, 1955, Union's Board of Directors approved a $5,000,000 expenditure for a two-

[1] G-633, pp. 8-10, 39, 40; G-633A; G-633B, p. 1; CFF-312.

year oil shale research project, which would include the erection of a demonstration plant in Colorado of one thousand tons per day capacity. The demonstration plant was started in 1955 and completed by May 1957. The plant was run intermittently into July 1958.[1]

Major Oil Shale Holdings

Oil companies and other business interests have become interested in the commercial prospects for oil shale development. In addition to expenditures for developing technology, many companies have acquired interests in land containing oil shale deposits in the Green River Formation. In the Piceance Basin, the major owners of either patented or unpatented oil shale claims, were, as of 1964:

A. *Large Oil Companies*

Cities Service Company
Continental Oil Company
Getty Oil Company
Gulf Oil Company
Humble Oil & Refining Company
Marathon Oil Company
Pan American
Pure Oil Company
Shell Oil Company
Sinclair Oil Corporation
Socony Mobil Oil Company, Inc.
Standard Oil Company of California

[1] G-625, pp. 14, 15, letter dated June 20, 1920; G-626, pp. 61, 92, 112-117, 222, 232; G-895; G-927, pp. 2-4; C-905; C-907, pp. 5, 6, Fig. 5; C-910; CFF-310; CFF-317.

Texaco, Inc.
Union Oil Company of California

B. *Major Group Holdings*
Dow Chemical Company
Doyle, et al.
Dutton
Eaton Shale Company
Energy Resources Technology Land Company
Gabbs Exploration Company
Kerogen
Massive Group
Oil Shale Corporation
Parachute Oil Shale Company
Ruth Group (Ertle et al.)
Savage Oil Shale Development Company
Sunset Group (Gabbs Exploration Company)
Texas National Petroleum Company
Wasatch Development Company [1]

Oil Shale Research by the United States Government

The United States Government conducted extensive oil shale research. A 1901 Government publication noted the occurrence of oil shales in Colorado and Utah. In 1913, efforts were started by the Government to determine the extent of the deposits and their oil potential. In about 1916, the Bureau of Mines began laboratory work on oil shale in Washington, D.C., and by 1919 laboratory facilities were operated in Utah. The work in Utah included standardizing methods of test-

[1] C-333, p. 5; CFF-309.
[2] G-419, p. 99; C-850; CFF-64.

ing, studying methods of assaying oil shale for commercially recoverable oil and ammonium sulfate, conducting retorting experiments on different oil shales and analyzing shale oils and other products manufactured by different retorting processes and refining the retorted oils to determine the commercial value of the refined products.[1]

In January 1920, the Bureau of Mines established, under an agreement with the State of Colorado, a laboratory at Boulder, Colorado. The following month small scale experimental studies, concerned primarily with fundamentals of oil shale retorting and yields and characteristics of shale oil products, were begun.[2]

In 1924, a Presidential Naval Fuel Oil Committee, appointed to study the problem of obtaining adequate supplies of fuel oils for the Navy, recommended that the Bureau of Mines determine the feasibility of oil shale as a source of shale oil. Congress authorized the construction of a pilot oil shale plant and during the four-year program appropriated more than $229,000 for the study. The Bureau erected two large-scale experimental retorts at Rulison, Colorado, the Pumpherston and the NTU and opended a quarry at Anvil Points to provide oil shale for the program. The oil shale mine and the retort were operated periodically from 1926 through 1929. The refining studies showed that the shale oil could be refined to acceptable prod-

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[1] G-419, p. 99; C-8, p. 70; C-276; C-717; C-850; CFF-64; CFF-93.
[2] C-330.

ucts, although less readily than conventional crude petroleum.[1]

In 1944, Congress passed the Synthetic Liquid Fuels Act (P.L. 290, 78th Cong., App. April 5, 1944; 58 Stat. 190, 30 U.S.C. 321 et seq.). The Act authorized the Secretary of the Interior to construct and operate demonstration and pilot plants to produce synthetic liquid fuels from oil shales, coal, agricultural and forestry products and other substances and to conduct laboratory research. The Bureau of Mines constructed a demonstration plant at Rifle, Colorado, which included two NTU retorts and opened an oil shale mine at Anvil Points. The retorts were first operated in May 1947.[2]

Other pilot plant operations were conducted. One was at Pueblo, Colorado, using a Hayes low temperature coal carbonization retort under a cooperative agreement with the Colorado Fuel and Iron Corporation and another at Wilson Dam, Alabama, using a Royster retort owned by the Tennessee Valley Authority. As a result of the experience gained in the operation of the retorts and study of other processes, a Gas Flow retort was designed by the employees of the Bureau of Mines in 1946 and 1947. A retort embodying the principles considered to have the best prospects of success and a pilot plant incorporating these features was built at Rifle, Colorado Later, another

[1] G-246, pp. 1525, 1533-1534; G-302, pp. 299, 307; G-438, pp. 1, 5, 6, 25, 27, 150; C-277, p. 60; C-284; C-286-289; C-383, letter dated June 5, 1924, from Secretary Work to Director, Bureau of the Budget, pp. 1, 2; CFF-256; CFF-257; CFF-258.

[2] G-139, p. 32; G-159.

retort, the Duel-Flow, was designed, constructed and operated. Originally, the authority of the Synthetic Liquids Fuel Act was limited to five years, but two amendments extended the period covered by the Act to a total of 11 years, ending in April 1959. During those 11 years about $82,000,000 was expended. Of this amount, nearly $22,000,000 was directly applicable to work on oil shale.[1]

Since the end of the Synthetic Liquid Fuels Program, research work by the Federal Government has continued at the Bureau of Mines Research Center at Laramie, Wyoming. The annual budget for this work for the past 20 years has been about $1,500,000.[2]

The foregoing is illustrative of the expenditures made by corporations and the Government in the promotion and development of oil shale.

Cost Studies

An objective of the Bureau of Mines programs at Rulison and Rifle, the Union Oil Company's demonstration plant and the Tosco-Sohio-Cleveland Cliffs operations, was to obtain data upon which an informed judgment could be made as to whether expenditures in an oil shale mine would be justified. Not until a commercially feasible mining and retorting process competitive with petroleum was developed could a prudent man expect to develop a profitable oil shale mine.

All of the cost studies indicated that oil shale was

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[1] G-139, pp. 37, 41-44, 47, 90, 91; G-159; G-467, p. i; C-545; CFF-308.

[2] Tr. 3472, CFF-308.

not competitive with petroleum. At the request of the Secretary of the Interior, the National Petroleum Council made a study in 1950 and 1951 of synthetic fuel costs, including synthetic fuels derived from oil shale and prepared a final report dated February 25, 1953. The Economic Subcommittee made estimates of the cost of producing gasoline from oil shale under various assumed conditions. These costs varied between 13.9 cents, where the hypothetical plant included no housing or community development, to 15.2 cents where the assumed operation included complete housing and community development, including housing for employees, housing for tradespeople, teachers, general community facilities comprising streets, utilities, schools, and commercial buildings. The Committee's reports stated that "neither of these cases [the minimum and maximum expenditures], however, is believed to represent the probable situation. In order to obtain an adequate stable labor supply at the minimum investment, it is the opinion of the Subcommittee that the housing program would approach that of [housing for employees and general community facilities]."[1]

Where only general community facilities were provided, the Economic Subcommittee determined the cost of producing gasoline from oil shale would be 14.7 cents per gallon. The cost included taxes and an assumed six percent return on invested capital. The average refinery price for gasoline in Los Angeles at the time of the study was 11.7 cents per gallon. In the final report of the National Petroleum Council's Committee on Syn-

[1] G-300; G-451, Appendix A1, Appendix I40-41; CFF-334.

thetic Liquid Fuels Production Costs, February 26, 1953, the committee stated that for each increase of one percent return on investment after taxes the gasoline costs from the single plant cases would be 1.3 cents per gallon. This ratio indicates the shale oil plant could, in 1951, have been operated at a slight profit. However, the committee concluded that a return of between 12 and 15 percent on total invested capital would be required in order to attract investment capital.[1]

The Bureau of Mines made a cost study in 1951. While the Bureau and the National Petroleum Council was "in good agreement on many points," there was wide diversion on some items. The Bureau estimated that "with a capitalization of 50 percent equity and 50 percent borrowed funds, and with all products selling at market values, the rate of return on equity capital would be 11.2 percent after interest charges and income taxes," and stated: "Although this return is less than the average return of the petroleum industry, as indicated by published figures, it is high enough to warrant serious attention." [2]

In 1965 and 1966 employees of the Bureau of Mines, augmented by outside consultants with backgrounds in mining, retorting and refining technology, cost engineering, marketing, economics and finance, prepared for use in this contest a cost analysis for commercial scale oil shale plants on the contested claims for the years 1915, 1918, 1919, 1920 and 1966. The primary purpose of the studies was to determine the prospective cost and

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[1] G-300, p. 9; C-451, p. 29, Appendix I40.

[2] G-459, pp. ii, iii; CFF-335.

profitability of a commercial oil shale installation at the selected points in time, based on the information available at that time, or on whatever assumptions would have been necessary and reasonable to one making such a study.[1]

The design for the period 1915-1920 included the production of 1,000 tons of oil shale per day in an underground mine, crushing the shale, a battery of Pumpherston retorts as used in the Scottish oil shale industry, and a refinery producing shale oil gasoline, burning oil, gas oil, residual fuel oil, coke and ammonium sulfate, as well as a railroad, housing for employees and supporting facilities.[2]

The design for the 1966 period required mining of 60,300 tons of oil shale per day in an underground mine, crushing the mined shale, retorting the crushed shale in retorts of the gas combustion type, and treating and refining the shale oil at preliminary facilities in Colorado and a refinery in St. Louis. The products of the operation would be petroleum gasoline, diesel fuel, coke, ammonia, LPG, gas and sulphur. The plant and related facilities were estimated to require a capital investment of approximately $185,000,000. The study showed the following yields after taxes.[1]

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[1] G-139, p. 182; G-290, pp. 143, 146, 172; G-665; G-666; G-667; Tr. 3126, 3263-3272.

[2] G-665, pp. 1-18.

[1] G-667; 1966 study, pp. 1-17, 51, Table 19; G-673; G-674; G-683; G-683A; Tr. 2348, 2353-2356; CFF-337.

Project	Book Yield on Equity	Book Yield on Net Plant	True Yield
1915	7.1%	8.8%	6.5%
1918	6.6	8.3	7.0
1919	3.0	3.7	3.5
1920	Neg.	Neg.	0.0
1966	11.3	15.1	9.84

The study indicated the following maximum payback periods:

Project	Years
1915	11.5
1918	10.7
1919	14.0
1920	18.8
1966	5.3

The various studies disclose that since about 1951 marketable products from oil shale of the Green River Formation could be produced in a commercial-scale installation at a profit. However, that profit would be too small to be competitive with petroleum or to attract prudent investment capital. In 1966 a minimum book yield of at least 14 percent after taxes, a true yield of at least 11 percent after taxes and a payback period of not less than 4.2 years would be required on typical new investment. For nontypical investment such as an oil shale plant, a higher rate of return would be required. Required book and equity yields during the 1915 to

1920 period would probably have been higher than in 1966.[1]

Profitability of an Oil Shale Mine

As previously stated, the test of validity is whether an investor in an oil shale mine as of February 25, 1920 and since, had a reasonable prospect for developing a profitable mining operation.

Many millions have been spent on oil shale since the revival of interest in this mineral in the early 1900's. But substantially all of the expenditures that could be considered prudent were for (1) research and development of a technically and economically feasible mining and retorting process, or (2) purchase of mining claims. Until a research program had demonstrated that shale oil could be produced at a cost competitive with petroleum, no prudent person would attempt to develop an oil shale mine. He would have no market for his product. The very fact that, in the more than half a century of interest in oil shale claims of the Green River Formation, not one profitable mine has been developed is a compelling reason for concluding that expenditure of money to that end would be imprudent. As the Department said in *United States v. E. A. Barrows and Esther Barrows, 76 I.D. 299 (1969)* (at p. 306):

> . . . the fact that nothing is done toward the development of a claim after its location may raise a

[1] G-683; G-683A; Tr. 2322, 2330, 2331, 2373, 2376, 2377; CFF-287; CFF-293—CFF-297; CFF-321—CFF-328.

presumption that the market value of the minerals found therein was not sufficient to justify the expenditure required to extract and market them. See *United States v. Everett Foster et al.*, 65 I.D. 1 (1958), *affirmed* in *Foster v. Seaton*, 271 F.2d 836 (D.C. Cir. 1959); *United States v. Alfred N. Verrue*, [75 I.D. 300 (1968)].

The Contestees argue that the money spent or obligated in the acquisition of oil shale claims, amounting to as much as $2,000 per acre, proves that oil shale was a "valuable mineral deposit" and, therefore, "open to exploration and purchase" under the mining laws. Oil shale claims derive their market value from the expectation that at some time in the future shale oil will become competitive with petroleum. Market value of a mining claim is not the test for discovery of a "valuable mineral deposit." The mineralization must be such, not to justify the purchase of the mining claim for possible future development, but to justify present expenditures with a reasonable prospect of developing a profitable mine. "To allow such land to be removed from the public domain because unforeseeable developments might some day make the deposit commercially feasible can hardly implement the congressional purpose in encouraging mineral development." *Foster v. Seaton*, 271 F.2d 836 (at p. 838) (C.A. D.C. 1959).

Patentability of Oil Shale Claims

If this were a case of first impression I would, for the foregoing reasons, find that both before and after

February 25, 1920, oil shale was not a valuable mineral deposit. But this is not a case of first impression. The Department has long since decided that oil shale is a valuable mineral subject to appropriation under the mining laws.

The Department published *Instructions* of May 10, 1920, 47 L.D. 548, which state (at p. 551):[1]

> Oil shale having been thus recognized by the Department and by Congress as a mineral deposit and a source of petroleum, and having been demonstrated elsewhere to be a material of economic importance, lands valuable on account thereof must be held to have been subject to valid location and appropriation under the placer mining laws, to the same extent and subject to the same provisions and conditions as if valuable on account of oil or gas. Entries and applications for patent for oil shale placer claims will, therefore, be adjudicated by your office in accordance with the same legal provisions and with reference to the same requirements and limitations as are applicable to oil and gas placers.

The last sentence of this quotation was modified by Departmental instructions of November 12, 1927, *Assessment Work on Oil-Shale Claims,* 52 L.D. 333, which again recognized the patentability of oil shale claims. Instructions issued by the First Assistant Secretary on May 7, 1929, entitled *Location of Oil Shale Placer Claims,* 52 L.D. 631, again recognized that oil shale is

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[1] CFF-139.

subject to appropriation under the mining laws. These instructions state, with respect to oil shale claims (at p. 633):

> As between the Government and the claimant where the latter has located his placer claim by legal subdivisions of surveyed land without actually marking of boundaries and in other respects has brought himself within the saving clauses of section 37 of the leasing act, in the view of the department he has complied with the Federal statutes, and has a valid claim within the meaning of that section.

Freeman v. Summers arose from complaints filed by Freeman (Contest 1490) and Standard Shale Products Company (Contest 1491) alleging the validity of their oil shale mining claims and the consequent invalidity of conflicting homestead entries. The First Assistant Secretary found the mining claims to be invalid for lack of discovery (decisions of December 20, 1924), denied petitions for rehearings (decisions of May 23, 1925), later granted a petition to reopen (decision of July 29, 1925), and consolidated the two contests.[1]

After rehearing, the Secretary of the Interior issued a decision on September 30, 1927 (52 L.D. 201) holding that the prudent man rule governed questions of discovery, and then concluded (at p. 206):

> While at the present time there has been no considerable production of oil from shales, due to the fact that abundant quantities of oil have been

[1] G-729, pp. 15, 30, 37-38; CFF-206.

> produced more cheaply from wells, there is no possible doubt of its value and of the fact that it constitutes an enormously valuable resource for future use by the American people.
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> It is not necessary, in order to constitute a valid discovery under the general mining laws sufficient to support an application for patent, that the mineral in its present situation can be immediately disposed of at a profit. . . .

Several other Departmental decisions have recognized the validity of mining claims located for oil shale. *Dennis et al. v. State of Utah,* 51 L.D. 229 (1925), accepted as valid the *Instructions* of May 10, 1920. *Emil L. Krushnic (On Rehearing),* 52 L.D. 295 (1928), states (at p. 297), "The sufficiency of exposures of oil shale on the claim to constitute a valid discovery is not questioned." *Smallhorn Oil Shale Refining Company and Frederick J. Crampton,* 52 L.D. 329 (1928), says (at p. 331), "But the department has long held that lands classified as valuable for oil shale as a source of petroleum and nitrogen were prior to the passage of the leasing act open to mineral entry under the mining laws. . . ." *Standard Shales Products Company,* 52 L.D. 522 (1928), states (at p. 523); "The Commissioner of the General Land Office has transmitted for approval . . . the opinion that mineral entry . . . to obtain patent to 69 oil-shale placers . . . should be clear-listed . . ." and concludes (at p. 527), ". . . the mineral entry should be clear-listed and patent should

issue. . . ." (See also *James W. Bell,* 52 L.D. 197 (1927); *Emil L. Krushnic,* 52 L.D. 282 (1927).)

In its administration of the mining laws, the Department has consistently recognized and followed the *Instructions* of 1920 and 1929 and the precedent established by *Freeman v. Summers.* The first oil shale mining patent was issued in 1920. Since then, and until 1960, 523 patents for 2,326 placer claims embracing 349,088 acres of oil shale lands in the Green River Formation have been issued.[1]

The Contestant has argued at length that the *Freeman v. Summers* decision was poorly conceived.[2] I agree. But a Hearing Examiner is as much bound by decisions with which he disagrees as by those he endorses. *Freeman v. Summers,* the other decisions cited, and the consistently followed *Instructions* of the Department compel a finding that oil shale is a valuable mineral subject to appropriation under the mining laws.

LOSS OF DISCOVERY

(Issue No. 2)

The Contestant contends that any discovery that might have been made upon the contested claims was lost subsequent to February 25, 1920. This contention is based upon the argument that from at least 1930 to at least the early 1940's no one spent time and money on oil shale in connection with prospecting, exploration,

[1] C-190, p. 61; CFF-131; CFF-196; CFF-197; CFF-246.

[2] Contestant's Post-hearing Brief and Appendix, pp. A-1153-A-1266).

research, experimentation or testing, thus demonstrating that prudent persons would not be justified in so doing.

The contention as to loss of discovery is answered by *Freeman v. Summers* and the past administrative practice of the Department in issuing patents for oil shale claims. The Department has consistently accepted *Freeman v. Summers* as authoritative and recognized oil shale claims as patentable throughout the 1930-1940 period. As previously stated, that decision is binding upon the Hearing Examiner.

A PHYSICAL FINDING OF OIL SHALE
(Issue No. 1)

Geology of the Claims

The Contestant asserts that each of the contested claims is invalid because the evidence fails to prove that a physical finding of oil shale was made within the limits of each of the claims on or before February 25, 1920, when the land became subject to disposition under the Mineral Leasing Act.

The claims involved in this proceeding are located in the southern portion of the Piceance Creek Basin adjacent to the Colorado River. They are approximately six miles north of DeBeque, Colorado, and about seven miles west of Grand Valley, Colorado. Conn Creek, approximately 2½ miles to the west, and Parachute Creek, approximately 2½ miles to the northeast, had eroded the area to form a peninsula upon which

the claims lie. The peninsula is defined by a very steep escarpment upon the east, south and west, with about 2,000 feet of relief between the top of the peninsula and the stream valleys below. The top of the peninsula, a plateau or mesa, includes most of the surface of the claims in contest.[1]

Mountain Boy No. 1 is on the east side of the peninsula. Mountain Boy Nos. 6 and 7 and Harold Shoup Nos. 3 and 4 form a row of 160-acre tracts running from north to south on the west side of the peninsula. Harold Shoup No. 1 is adjacent and east of Harold Shoup No. 4 and shares a common corner to the northeast with K. C. Schuyler No. 3. Harold Shoup Nos. 3 and 4 and K. C. Schuyler Nos. 3 and 2, in that order, form a row of 160-acre tracts running from west to east.

All of the claims are underlain by the Green River Formation.[2] In Colorado, the various members of that formation, in ascending order, are the Douglas Creek member, the Garden Gulch member, the Anvil Points member, the Parachute Creek member, and the Evacuation Creek member.[1]

The Douglas Creek member consists of sandstone and various types of limestone. It contains thin bids

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[1] G-11; G-38; G-39; G-46; G-59; C-609; C-722; C-813, C-815; C-874, p. 14; C-885, Mineral Report dated December 4, 1963, p. 1; Tr. 503, 505; CFF-378; CFF-381; CFF-448; CFF-449.

[2] "A formation is a body of rock characterized by lithologic homogeneity; it is prevailingly but not necessarily tabular and is mappable at the earth's surface or traceable in the subsurface." (Tr. 93)

[1] CFF-382; CFF-386; Tr. 101-102.

of oil shale and other gray shale and some siltstone. The Garden Gulch member consists of low-grade oil shale, limestone and some thin-bedded sandstone. The Anvil Points member consists of an abundance of sandstones interbedded with thin limestones, some low-grade oil shale and some siltstone. Except for some thin beds of tuff, the Parachute Creek member consists almost entirely of oil shale of varying quality.[2]

The Evacuation Creek member is the surface member over much of the Piceance Creek Basin in Colorado between the Colorado and White Rivers. It ranges in thickness from zero, where it has been entirely eroded away, to approximately 1,500 feet. The underlying Parachute Creek member in this area ranges from 500 to 1,500 feet in thickness. The contact or separation point between the Evacuation Creek member and the underlying Parachute Creek member in Colorado is drawn by modern-day geologists at the lower sandstone unit which is in a predominantly sandstone sequence of rock from that point to the surface. Because of the great variety of the lithologies occurring in the Green River Formation, it could not be considered as one massive homogeneous deposit of like material.[1]

The Parachute Creek member has been divided by one of the outstanding oil shale geologists into the upper and lower oil shale zone. The upper oil shale zone has been further divided or separated into units or beds. At the base of the upper oil shale zone the unit has been named the Mahogany Ledge. The Mahogany

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[2] Tr. 103, 104.

[1] Tr. 107-108, 109-110, 291-292.

Ledge contains two beds. One is the rich oil shale bed termed "The Mahogany bed," and the other is an analcitized tuff called the "Mahogany Marker." The Mahogany Marker lies a short distance above the Mahogany bed. The Mahogany Ledge contains the sequence of rich oil shale of commercial interest. It ranges in thickness from 40 to 90 feet, giving around 30 gallons per ton of shale oil, in the outcrop areas of the southern part of the Piceance Creek Basin. This is the area of the contested claims where the Mahogany Ledge is approximately 90 feet thick. The oil shale beds of the entire Parachute Creek member contain between 500 and 600 continuous vertical feet of oil shale that will yield an average of 15 gallons of oil per ton or better.[2]

The Evacuation Creek member is dominantly sandstone interbedded with units of marlstone which may or may not contain oil shale. The oil shales in the member are generally thin, low-grade and not very persistent. Some of the oil shales in the Evacuation Creek member might be traced over a hundred miles or so; other beds might be traced only a half mile or less. The surface of the plateau or mesa on which the contested claims are located is composed of the Evacuation Creek member.[1]

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[2] G-9; Tr. 112-113, 123-124, 145, 259, 525, 527, 1080, 1081, 3519, 3520; CFF-451.

[1] Tr. 103, 105-106.

Exposures on the Mountain Boy Nos. 6 and 7 and Harold Shoup Claims

The face of the escarpment cuts across Mountain Boy Nos. 6 and 7 and Harold Shoup Nos. 1, 2, 3 and 4 exposing several hundred feet of the rich upper oil shale zone of the Parachute Creek member. This exposure is easily viewable from the valley floor below the escarpment.[2]

The Contestant suggests that a factual finding of discovery on these claims should not be made because the evidence fails to show that prior to February 25, 1920, the locators went on the land, surveyed or otherwise determined the boundaries of the claims and recognized the outcropping as oil shale.

The rich oil shale strata of the Upper Oil Shale Zone can be seen in horizontal beds along the escarpment which extends for many miles through Western Colorado, including the three sides of the peninsula on which the claims are located. Mountain Boy Nos. 6 and 7 and Harold Shoup Nos. 1, 2, 3 and 4 have massive exposures of the oil shale of this zone which can be readily observed at a distance without going on the claims. At the time the claims were located, the geology of the Green River Formation and the location of the oil shale within the formation had been well publicized.

Acceptance of the Contestant's argument would require the assumption that the locators of these claims were completely uninformed on what was common

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[2] G-11; C-815; CFF-404; CFF-405; CFF-409; CFF-410; CFF-414; CFF-420; CFF-450; CFF-451; CFF-456; CFF-457..

knowledge among oil shale prospectors and that the massive exposure of oil shale on the claims was merely a matter of happenstance.

The logical assumption and the one here made is that the locators of Mountain Boy Nos. 6 and 7 and Harold Shoup Nos. 1, 2, 3 and 4 saw what was obvious and understood what they saw. A physical finding of oil shale was made on these claims at the time of location.[1]

Physical Finding on Mountain Boy No. 1

Mountain Boy No. 1 is not on the escarpment but "there is no dispute in the evidence that oil shale can at the present time be found outcropping within the limits of . . . Mountain Boy No. 1."[1] This exposed outcrop is about 10 feet south of the north line of the claim, projecting from the soil on the east side of a gulch. It is a part of the upper oil shale zone of the Parachute Creek member. It could have been observed by anyone running the north line of the claim. The outcrop is a part of a series of outcrops or exposures of oil shale that appear outside the claim running along the surface of a gulch about 1,300 feet in a northwesterly direction to the exposure of the Mahogany Ledge. Oil shale was also exposed in an excavation in the northeastern part of the claim. Consequently, the question is whether the natural outcropping was found by the locators or mining claimants prior to February

[1] CFF-467.

[1] Contestant's Post-hearing Brief, p. 50.

25, 1920, or whether the oil shale in the hole was exposed prior to February 25, 1920.[2]

There are two official reports of record dealing with the Mountain Boy No. 1; one of April 21, 1926, by Inspector G. M. Kintz, and the other of January 28, 1927, by Inspector Benjamin F. L. Haron. Kintz stated that hole No. 11 on Mountain Boy No. 1 "contains a fair grade of shale sufficient for discovery." Haron stated that his investigation corroborates the findings of Kintz that a discovery was made on Mountain Boy No. 1, but also stated that no assessment work was done prior to November 1920 when the claim was sold, and concluded that the discovery showing up in the hole was made either in the fall of 1920 or thereafter, which would be subsequent to the Mineral Leasing Act. Haron concluded that "the entire Mountain Boy Claim No. 1, is a nullity, no discovery ever having been made in law on this claim." These reports, therefore, disclose that a discovery in the excavation could not have been made prior to February 25, 1920.[1]

Other evidence bearing upon a physical finding of oil shale on Mountain Boy No. 1 consists of an April 10, 1920, affidavit by H. A. Quigley, the owner of the claims, stating that oil shale was discovered on each of the Mountain Boy claims; an August 7, 1923, affidavit of A. O. Maltby, that as a result of a number of tests made by him he "did prove to his entire satisfaction that in the years 1918 and 1919 that each and every one of said

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[2] G-11; G-12; G-17B; G-74A; G-75; C-609; C-815; C-885; C-886; Tr. 155-157, 173, 1101; CFF-452; CFF-453; CFF-454.

[1] C-311L, p. 5; C-311N, pp. 31, 112.

[Mountain Boy] claims contained deposits of oil shale which would produce not less than twenty-five gallons of oil per ton of shale;" a July 23, 1926, affidavit of C. H. Conwell, who posted the location notices on the claims, that a rough survey was made on the Mountain Boy claims and later an accurate survey, and that he picked up several samples of shale, some of which were later run and produced oil, but from which claims he did not recall; a July 24, 1926, affidavit of Albert Galyean, who performed assessment work on the claims in the fall of 1920, that "the two west claims are on the escarpment and show good shale, and he believes that oil shale was encountered in a hole on one other claim;" an October 25, 1926, interview with H. A. Quigley by an employee of the General Land Office in which Quigley stated that the discoveries were made by him from shale in place on the escarpment and from float on the other claims.[1]

The Conwell affidavit of July 23, 1926, has no evidentiary value in proving that a physical finding of oil shale was made on Mountain Boy No. 1 since it does not tie the samples which produced shale oil to any particular claim. The Maltby statement is also lacking in probative value. He did not present the facts that proved "to his entire satisfaction" that a discovery had been made in 1918 and 1919. His conclusion with respect to Mountain Boy No. 1 might have been based entirely on geological inference rather than on a physical finding of exposed oil shale. Galyean's statement

[1] G-828; C-311F; C-311H; C-311M.

merely purports to present the affiant's belief also without mention of any factual basis for that belief.

The probative evidence of a physical finding of oil shale is, therefore, reduced to the two Quigley statements; the affidavit of April 10, 1920, that he proved to his satisfaction that the Mountain Boy claims contained deposits of oil shale and the October 25, 1926, assertion indicating that float was obtained from claims not on the escarpment.

A finding of a piece of float material unconnected with any rock in place can hardly be regarded as the discovery of a valuable mineral deposit. The outcropping was not discovered by or known to Quigley else he surely would have relied upon the rock in place as proof of discovery, as he did with the claims on the escarpment, rather than the uncertainty of float. There is additional evidence that the outcropping of oil shale on Mountain Boy No. 1 was not discovered by the mining claimants. In the patent application submitted by Winegar in 1958, the point of discovery is designated at the hole or cut which was made after February 25, 1920, rather than the outcrop.[1]

The evidence does not establish that a discovery of oil shale was made upon Mountain Boy No. 1. Consequently, this claim is invalid.

Physical Finding on K. C. Schuyler Claims

K. C. Schuyler Nos. 2 and 3 claims are surfaced by the Evacuation Creek member of the Green River For-

[1] G-11; G-69; Tr. 833.

mation. The claims were examined in the early 1960's by Ralph G. Spengler, a geologist with the Bureau of Land Management, and John R. Donnell, a geologist with the Geological Survey. They discovered an exposure of oil shale on K. C. Schuyler No. 3, but nothing that could be recognized as oil shale on K. C. Schuyler No. 2. Donnell testified that there might be an outcrop or exposure of oil shale on K. C. Schuyler No. 2, but in his opinion such an occurrence was not probable.[2]

The outcrop on K. C. Schuyler No. 3 composed of the Evacuation Creek member. The exposure is on a slope covering a distance of about 100 feet in length and consists of alternating rich oil shales and less rich oil shales through a vertical sequence of approximately 40 feet. Samples were taken from this exposure by an employee of the Bureau of Land Management in October of 1961 and August of 1962, which assayed at 27.5 and 19 gallons per ton. The question here is whether the exposure on the K. C. Schuyler No. 3 claim was discovered by the locators or owners prior to February 25, 1920, or whether other physical findings of oil shale on either claim were made by them prior to that date.[1]

On August 10, 1923, K. C. Schuyler and George A. Taff, the then owners of the Schuyler claims, executed additional or amended notices of location by which they attempted to change the shape of the K. C. Schuyler Nos. 2 and 3 and the Harold Shoup Nos. 2 and 3 from

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[2] Tr. 272, 273, 376, 378, 381, 385, 387, 529, 533-535; CFF-390; CFF-392; CFF-393; CFF-398.

[1] Tr. 175, 268, 452, 453, 455, 456; CFF-398; CFF-399; CFF-400; CFF-402.

160-acre quarter sections to elongated rectangles one-eighth of a mile wide and two miles long, and the Harold Shoup Nos. 1 and 4 from 160-acre quarter sections to rectangles one-quarter mile wide by one mile long. This change would bring the outcropping of oil shale on the cliff face within the boundaries of the Schuyler claims.[1]

In a January 13, 1932 report pertaining to a contest proceeding against the claims, Oral J. Berry and Louis C. Mackel, employees of the General Land Office stated:[2]

> Amendments are often necessary in cases where the old survey does not conform to the resurvey and where errors have been made in staking the claims and work has been placed outside the original boundaries of the claims. There is no justification for the amendments of these placer claims as the old and new surveys practically conform. No amendment was necessary to show a valid discovery on the claims as the escarpment crosses several of the placer claims and rich strata of shale are exposed. On the other claims not on the escarpment they are trenched by draws which have eroded away the underlying sandstone and expose lean oil shale. The amendments were made after the date of the leasing act.

Berry and Mackel believed that lean oil shale was exposed on the Schuyler claims. However, in a memoran-

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[1] G-27; G-41.
[2] C-313, p. 37.

dum dated January 8, 1932, the District Law Office of the General Land Office stated:

> *Berry shows (page 37) some claims cover the rich deposits exposed on the escarpment, and some on top (K. C. Schuyler Nos. 2 and 3) have some showings of lean shale (page 37 of report). No tests of these shales were made by the examiners but verbally they state that while no samples were taken, possibly these upper shales may run about eight or more.* (Underscoring in text.)[1]

Berry's and Mackel's conclusion that the lean oil shale was exposed on the Schuyler claims was not supported by an analysis of samples from the claims. It was an unwarranted assumption based upon observation.

On May 16, 1927, M. H. Callahan advised an employee of the General Land Office that he had originally located and staked the Schuyler and Shoup claims and did not make a discovery on all of them and that after the date of the Mineral Leasing Act the claims were amended in order to secure exposures of oil shale on each and every claim.[1]

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[1] C-313, p. 24; CFF-395; CFF-437.

There is a discrepancy in dates in Exhibit C-313. The Berry and Mackel statement is from a typewritten extract of a report. The exhibit gives the date of the report as January 22, 1932. The District Law Officer's memorandum is dated January 6, 1932, two weeks prior to the date given for the report. There can be no doubt, however, that the District Law Officer refers to the extracted material since he identifies the page number on which that material appears.

[1] G-805; CFF-439.

In the 1932 contest proceeding involving the Schuyler and Shoup claims and 18 Texas claims, Callahan testified (C-313):

According to the District Law Officer, Callahan later, in 1932, advised that Schuyler endeavored to get him to sign an affidavit that the claims in 1917 and 1919 were staked as amended in 1923 and not as the certificates of 1917 and 1919 described. Obviously, the owners of the Schuyler claims had not made a physical finding of oil shale on the claims prior to February 25, 1920, and attempted to validate them by filing additional or amended location certificates.[1]

Other evidence confirms this conclusion. In 1959, Irving P. Nielsen, a mining engineer and geologist, was employed by the owners of the Schuyler claims "to show where discovery might have been made on the two Schuyler claims." He apparently found the outcrop on K. C. Schuyler No. 3 and took three samples of rock from one point on the K. C. Schuyler No. 2. He was informed in a letter written by a Jack Miller (who was not further identified) that they assayed at 1.2, .96 and .6 gallons per ton.[2]

In 1961, Nielsen directed Ralph G. Spengler, a geolo-

Q . . . That shows, does it not, Mr. Callahan, that you had been prospecting for shale and taking samples prior to 1913?

A I sure had.

Q And your family knew about your shale activity, did they not?

A Yes, they knew that I was making shale oil. And I have in town . . . a bucket full of bottles of oil which was distilled and taken out of every claims . . . as a discovery.

It is not possible to tie this testimony to the K. C. Schuyler claims. Apparently the witness was referring to his activity prior to 1913.

[1] C-313, memorandum of District Law Officer, General Land Office, dated January 8, 1932, p. 2.

[2] C-970, pp. 20, 39, 40; CFF-394.

gist with the Bureau of Land Management, to the discovery point on the claim. They took a joint sample. Each piece of rock was broken in two. Nielsen took one of the divided samples and Spengler the other. An assay of the Spengler sample showed no oil. The Contestees did not introduce in evidence any assay of the Nielsen sample.[3]

The testimony of Nielsen as to the assay values of his 1959 samples, based upon hearsay, cannot be credited when he was unable to produce similar samples for an employee of the Bureau of Land Management. Even if it could, assays of rock of only 1.2, .96 and .6 gallons per ton could not support a finding that a valuable mineral deposit had been discovered. No reasonable definition of oil shale would include rock producing so meager an amount of oil. There is no showing that a physical finding of oil shale on K. C. Schuyler No. 2 has ever been made.

The outcrop on the K. C. Schuyler No. 3 was not known to the owners of the claims as of 1959, else it would not have been necessary to employ a geologist "to show where a discovery might have been made on the Schuyler claims."

K. C. Schuyler Nos. 2 and 3 claims are, therefore, void for lack of discovery prior to February 25, 1920.

RELOCATION AFTER 1920

(Issue No. 4)

The mining law permits the amendment of original locations of mining claims. If properly made, and no

[3] Tr. 465-470; CFF-391.

other rights have intervened, the amendment takes effect, by relation, as of the date of the original location. *Cheesman v. Shreeve,* 40 Fed. 787, 789 (D.C. Colo. 1889). An amendment may be made without the forfeiture of any rights acquired by the original location. *Bunker Hill & S.M. & Co. v. Empire State-Idaho M & D Company,* 134 Fed. 268, 270 (D.C. Ida. 1903). A pre-existing right inconsistent with the amendment may be lost to the extent of the inconsistency. *Smart v. Staunton,* 29 Ariz. 1, 239 Pac. 514 (1925); *Bunker Hill & S.M. & Co. v. Empire State-Idaho M & D Company, supra.*

The 1917 and 1919 locations describe the Schuyler and Shoup claims in Township 7 North, Range 97 West as:

K. C. Schuyler No. 2—NE¼ Section 24
K. C. Schuyler No. 3—NW¼ Section 24
Harold Shoup No. 1—SE¼ Section 23
Harold Shoup No. 2—NE¼ Section 23
Harold Shoup No. 3—NW¼ Section 23
Harold Shoup No. 4—SW¼ Section 23

K. C. Schuyler and George Taff executed an "Additional or Amended Location Certificate" for each of the claims, dated August 10, 1923. The amended certificates substantially describe the claims as:[1]

K. C. Schuyler No. 2—N½N½N½ Sections 23 and 24
K. C. Schuyler No. 3—S½N½N½ Sections 23 and 24
Harold Shoup No. 2—N½S½N½ Sections 23 and 24
Harold Shoup No. 3—S½S½N½ Sections 23 and 24

[1] G-28, pp. 107-113.

Harold Shoup No. 1—$N^{\frac{1}{2}}S^{\frac{1}{2}}$ Section 23
Harold Shoup No. 4—$S^{\frac{1}{2}}S^{\frac{1}{2}}$ Section 23

The K. C. Schuyler Nos. 2 and 3 and the Harold Shoup Nos. 2 and 3, as described in the amended location certificates, contain only 40 of the 160 acres described in the 1917 and 1919 location certificates. The amended location certificates for the Harold Shoup Nos. 1 and 4 describe only 80 of the 160 acres described in the 1917 and 1919 location certificates.

The Contestant contends that the changing of the boundary lines of the Shoup and Schuyler claims by the execution of the amended location certificate in 1923 resulted in an abandonment of the acreage in each of the claims not included within the amended locations. All parties agree that a requisite of abandonment is a matter of intention.[1]

The total area described in the 1917 and 1919 location certificates was included in the amended location certificates and no additional land was included. It is apparent from this fact alone that Schuyler and Taff did not intend to abandon any of the rights acquired by the original locations. This intent was expressed in the amended certificates:

> That for the purpose of more definitely stating and defining the boundaries of said Oil Shale Placer Mining Claim, and of curing and correcting any defects and errors in description of the same as the said oil shale placer mining claim is found to be

[1] Contestant's Answering Brief, p. 236; Contestees' Rebuttal Brief, p. 159.

described in the original location certificate, and as the said original location certificate is recorded in said records of said County Clerk and Recorder, and any failure fully to comply with the requirements of the law before filing the same, and without waiver of any right acquired by virtue of said original Location Certificate of the premises above described, or the original Location Certificate thereof, filed and recorded as above described, or the original Location Certificate thereof, filed and recorded as aforesaid, the said Karl C. Schuyler and George A. Taff do now make and file for record in the office of the said Clerk and Recorder, their amended and additional certificate of location of said Oil Shale Placer Mining Claim, in pursuance of, and in compliance with Section 3292, Complied Laws of Colorado of 1921.

Moreover, the 1923 location certificates, which attempted so drastically to alter the configuration of the mining claims, do not fit the intent of the law permitting amendments. In *Strepey v. Stark,* 7 Colo. 614, 620; 5 Pac. 111, 115, the Court stated:

> The evident intent of the statute is, that the additional certificate shall operate to cure defects in the original, and thereby to put the locator, where no other rights have intervened, in the same position that he would have occupied if no such defect had occurred. Such intent is in accord with the principle of all curative provisions of law.

There were no defects in the 1917 and 1919 location

certificates. They described with precision the area covered by the locations. The 1923 certificates did not change in any way the boundary lines outlining the total area covered by the claims. It is apparent, therefore, that the amended locations were not made for curative purposes, but rather, as has been found, to obtain exposures on each of the claims upon the escarpment. They were not, then, amended locations but, in fact, new locations. The facts in a particular case, not the recitations of a location certificate, determine whether it is an amended location or a new location. *Cranford v. Gibbs,* 123 Ut. 447, 260; Pac. 2d, 870, 871 (1953); *Cheesman v. Shreeve, supra.* Since no oil shale mining claims could be located after February 25, 1920, the amended locations of 1923 were simply invalid and ineffectual.

This same conclusion was reached by the Commissioner of the General Land Office in his decision of August 1, 1935, involving the contest proceeding against the claims when he stated:

> You [the Register of the General Land Office] were directed to advise the claimants that, as no location of lands valuable for oil shale could be made after the date of the leasing act of February 25, 1920 (41 Stat. 437), the amendments, which seek to include land within the claim which was not embraced therein on the date of said act, are in effect new locations as to such land and to that extent they were null and void and would not be recognized by this office.[1]

[1] C-313.

THE 10-ACRE RULE

The escarpment upon which the rich oil shale deposits of the Mahogany Zone are exposed crosses the Harold Shoup No. 3 mining claim. A portion of the claim lies upon the top of the mesa at an elevation of 8,400 feet above sea level. The elevation drops precipitously toward Conn Creek to an elevation of 7,000 feet. If the claim is divided into 10-acre subdivisions, 35.4 acres in six of the subdivisions lie below the exposures of the Mahogany Zone.[2]

The Contestant asserts that these 35.4 acres must be eliminated from the mining claims under the 10-acre rule before any patent is issued inasmuch as the lands are nonmineral within the contemplation of the mining laws.

The 10-acre rule was enunciated in the early case of *Ferrell et al. v. Hoge et al.*, 29 L.D. 12 (1899). There the Department stated (at p. 15):

> It would not comport with the spirit of the mining laws to hold that where a placer mineral deposit is discovered in any forty acre subdivision of the public lands, an association of eight persons is authorized to embrace in a mining location founded upon such discovery three other contiguous forty acre subdivisions of non-mineral land and to receive a patent for the same as a part of their mining claim, . . .

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[2] G-11. There are approximately 60 acres in the six 10-acre subdivisions. However, approximately 25 acres on the western margin of the subdivisions have been patented leaving 35.4 acres in the six subdivisions.

The 10-acre rule is summarized in Vol. I, Sec. 5.26, of American Law of Mining:

> A single discovery may not hold all of the 20 or more acres located as a placer claim. Each 10-acre tract within the claim must be considered separately and any tract which is nonmineral may be excluded. This so-called *10-acre rule* has long been a precedent for placer claims. . . . (Emphasis in text.)

The Contestees claim the true test of mineral in character under the 10-acre rule is (a) whether there is oil shale within said tracts, and (b) whether land involved is more valuable for minerals than for agriculture.[1] This is not the test. The test of mineral in character for application of the 10-acre rule was recently restated in *United States v. Clare Williamson,* 75 I.D. 338 (1968). There the Department held (at p. 344):

> The test is that in order to establish the mineral character of land it must be shown that known conditions on the critical date (in this case, December 21, 1945 were such as reasonably to engender the belief that the land contained mineral of such quality and in such quantity as to render its extraction profitable and justify expenditures to that end. If they were not, the lands were not then known to be mineral in character and were not excepted from the effect of a withdrawal removing them from operation of the mining laws. See *Diamond Coal and Coke Co. v. United States,* 233 U.S.

[1] Contestant's Post-hearing Brief, p. 80.

236 (1914); *United States v. Southern Pacific Company et al.*, 251 U.S. 1 (1919); *United States v. State of California et al.*, 55 I.D. 121 (1935); *Southern Pacific Company*, 71 I.D. 224 (1964).

The relationship of the issue of mineral discovery to that of the mineral or nonmineral character of land was recently discussed in *State of California v. E. O. Rodeffer*, 75 I.D. 176 (1968). In that case we pointed out that the test of discovery and that for determining the mineral character of land are very similar but are not identical, and, while the issue of that case was substantially different from that involved here, the discussion of the relationship of the tests in that case is pertinent now.

As we noted there, the accepted standard for proof of a discovery is whether minerals have been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success, in developing a valuable mine. The most obvious difference between the two tests, we pointed out, lies in the fact that a discovery can be demonstrated only by the physical exposure, within the limits of the claim, of the mineral deposit on account of which the land is alleged to be valuable, whereas the mineral character of land may be determined from geologic inference or from other less conclusive evidence than is required to demonstrate a discovery. Beyond this difference in the degree of proof re-

quired to show the presence of a mineral deposit, there is little, if any, substantive difference in the two tests. That which is to be determined in either case is whether or not exploitation of the minerals is believed to be economically feasible. A review of early cases reveals that in many instances an identical test was employed whether the issue was discovery or mineral character. See, *e.g. John Downs,* 7 L.D. 71 (1888); *Walker v. Southern Pacific R.R. Co.,* 24 L.D. 172 (1897); *Cataract Gold Mining Co. et al.,* 43 L.D. 248 (1914), and cases cited.

In *Crystal Marble Quarries Co. v. Dantice et al.,* 41 L.D. 642 (1913), the Department, after holding that allegations that the land in controversy is "mineral in character" and is "more valuable for mineral than for agriculture" "are fully sufficient to apprise the homestead claimants of the nature of the case and to enable them to prepare their defense," outlined the required character of proof (at p. 646):

> Upon the trial of the case, however, it will be incumbent upon the company to establish the actual discovery or disclosure of mineral upon each 160-acre location, and that the area in conflict is *prima facie* mineral in character, containing placer mineral deposits. It can only succeed as to the area shown to be mineral in character, and for this purpose the land may be divided into 10-acre tracts. It is not meant that actual disclosure must be made on each 10-acre tract, but the suggestion is made merely to show that the contest may be sustained

> as to part of the land only. It is not deemed advisable at this time to go further into the question as to the character of proof.

Although the complaint contained the allegation that the land was more valuable for mineral than for agriculture, the Contestant was not required to prove this charge.

In *Davis v. Wiebbold,* 139 U.S. 507 (1891), the Supreme Court in determining lands which should be excluded from acquisition under the nonmineral lands law stated (at p. 519):

> The exceptions of mineral lands from preemption and settlement and from grants to States for universities and schools, for the construction of public buildings and in aid of railroads and other works of internal improvement, are not held to exclude all lands in which minerals may be found, but only those where the mineral is in sufficient quantity and to add to their richness and to justify expenditure for its extraction, known to be so at the date of the grant. There are vast tracts of country in the mining States which contain precious metals in small quantities, but not to a sufficient extent to justify the expense of their exploitation. It is not to such lands that the term "mineral" in the sense of this Statute is applicable.

And in *Diamond Coke & Coal Company v. United States,* 233 U.S. 236 (1914), the Supreme Court stated (at p. 240):

> To justify the annulment of a homestead patent as wrongfully covered mineral land, it must appear that at the time of the proceedings which resulted in the patent the land was known to be valuable for minerals; that is to say, it must appear that the known conditions at the time of those proceedings were plainly such as to engender the belief that the land contained mineral deposits of such quality and in such quantity as would render their extraction profitable and justify expenditures to that end. . . .
>
> We say "land known as at the time to be valuable for its minerals" as there are vast tracts of public land in which minerals of different kinds are found but not in such quantity as to justify expenditure in the effort to extract them. It is not to such land that the term "mineral" in the sense of the statute is applicable. . . .

The test of "mineral in character" for the application of the 10-acre rule established by these decisions is no different than that for discovery. The difference lies in the character of proof. For discovery purposes, a physical finding of mineralization is required while for application of the 10-acre rule the mineral character of land may be shown by geological inference.[1]

The mineral character of the 35.4 acres lying below the escarpment on Harold Shoup No. 3 can be determined by geological inference through projecting the data obtained from the core of a hole drilled by the

[1] CFF-184.

Shell Oil Company in section 10, Township 7 South, Range 97 West, which corners one of the Mountain Boy Claims.[1]

The columnar section of the 1,490-foot core shows four zones of oil shale, averaging 15 gallons of oil per ton, below the Mahogany Ledge and the lower part of the Parachute Creek member and one zone 18 feet thick yielding an average of 15 gallons of oil per ton. Other zones lying at lower elevations are 8 feet thick. Because of erosion the 18-foot zone of oil shale averaging 15 gallons of oil per ton would not be encountered below the surface of the six 10-acre subdivisions. Two of the 8-foot thick zones, average 15 gallons per ton, approximately 85 feet apart, underlie part or all of those subidivions [sic].[2]

There are over 8,000 square miles of the Green River Formation in the State of Colorado, Utah and Wyoming, believed to be underlain with oil shale over 15 feet thick that averages 15 gallons of oil per ton of material. Excluding the Sand Wash Basin in Colorado, which has not yet been appraised, there is approximately 1,300 square miles in that State that is believed to contain oil shale more than 15 feet thick that would yield an average of 30 or more gallons per ton of material. Estimates of oil available from shales assaying 25 gallons per ton and at least 15 feet thick in Utah and Wyoming are 120 billion barrels and 43 billion barrels respectively. In Utah, oil shales which have an assay above 15 gallons per ton that are at least 15 feet

[1] G-516; G-516A.

[2] G-516A; Tr. 286-287; CFF-385.

thick are estimated to represent 320 billion barrels of oil in place.[1]

The Mahogany Ledge which ranges from 40 to 90 feet in thickness in Colorado and from 20 to 60 feet in thickness in Utah with an overall average oil yield of 30 gallons per ton can be seen outcropping in the cliff faces over a distance of something in excess of 600 miles in Western Colorado and over a distance of in excess of 1,100 miles in Utah. A Government core hole in the area of the contested claims shows some 40 feet of oil shale in the Mahogany Ledge yielding an average of 30 gallons of oil per ton. This indicates an oil potential of a single 160-acre claim to be about 14 million barrels. This is less than the oil potential in other areas in the southern portion of the Piceance Creek Basin where the outcropping Mahogany Ledge is as much as 90 feet thick.[2]

With these vast deposits of rich oil shale available for exploitation, 8 feet of 15 gallons per ton shale deposits could not conceivably engender the belief that the 10-acre tracts contained mineral deposits of such quality and in such quantity "as would render their extraction profitable and justify expenditure to that end." (*Diamond Coke & Coal Company v. United States, supra.*) Nor would the land now qualify as mineral lands under the classification standards adopted March 8, 1957, by the Geological Survey and

[1] G-286, The Oil Shale Policy Problem, p. 21; Tr. 142, 143, 249; CFF-1; CFF-2.

[2] Tr. 3519, 3524, 3539, 3540.

used as a basis for reservation of mineral rights in dispositions of public land under the public land laws.[1]

Consequently, 35.4 acres in six 10-acre subdivisions are nonmineral in character and must be eliminated from the Harold Shoup No. 3 placer mining claim.

THE STANDARD OF DISCOVERY
(Issue No. 5)

The Contestees assert that Contestant is seeking to apply standards of discovery at variance with those enunciated in *Freeman v. Summers* or with those applied generally in past adjudications and is precluded from doing so.

I have found that the Contestant is attempting to apply standards contrary to *Freeman v. Summers* and that a Hearing Examiner is bound by this Departmental decision and other precedents.

THE EFFECT OF PRIOR PROCEEDINGS

As previously indicated, this contest is the second which has been brought by the Contestant against the validity of Mountain Boy No. 1. The May 21, 1927, complaint charged that "sufficient discoveries of oil shale were not made" on the Mountain Boy claims.[1]

The Commissioner of the General Land Office, by formal letter to the Register, dated June 4, 1934, found that:

As to charges 2 and 3, the report shows that a dis-

[1] G-98, p. 43.
[1] C-311R; CFF-488; CFF-489.

> covery was made on Mountain Boy Number 1 claim . . .

but concluded:

> However, action in this matter may be deferred pending final disposition of charge 8.[2]

The wording of the letter is ambiguous. The Commissioner, instead of making a direct finding of discovery, only states what is contained in a report and seems to defer final decision to some future date. However, by formal letter to the Register dated October 26, 1935, he dismissed Charge 8 and closed the contest, noting that the patent application for Mountain Boy Nos. 2, 3, 4, 5 and 8 had been rejected by the June 4, 1934 letter. By implication, the June 4, 1934 letter can be considered as a final ruling that a discovery had been made on Mountain Boy No. 1.[1]

The Contestees contend that the Department is bound by the finding of fact by the Commissioner of the General Land Office and may not relitigate the issue (Issue No. 6).

The question presented is whether administrative proceedings of the Department of the Interior involving public lands are, as a matter of law, subject to estoppel and *res judicata* so as to preclude modification or reversal by the Secretary of a final decision of the Director.

The doctrines of estoppel and *res judicata* are not universally applicable to administrative agencies. In

[2] C-311CC, pp. 4, 7; CFF-501.
[1] C-311FF; CFF-158.

National Rifle Association of America v. Young et al., 134 F.2d 524 (C.A. D.C. 1943), the Court stated that the question presented to the Court was whether the Unemployment Compensation Board was precluded from changing its prior decision made after hearing on the ground of estoppel or *res judicata*. The Court held (at p. 526):

> Though the doctrine of res judicata has been applied to administrative action of some sorts, it is clear that this judicial doctrine is not to be imported into all administrative proceedings. Administrative agencies are not bound by "the conventional judicial modes for adjusting conflicting claims," and "an administrative determination in which is imbedded a legal question open to judicial review does not impliedly foreclose the administrative agency, after its error has been corrected, from enforcing the legislative policy committed to its charge."
>
> The Superior Court was dealing in the case quoted with an administrative error which had been corrected by the court, but the principle is broader than the instance. What errors administrative agencies themselves may correct depends ultimately upon the balance of conflicting considerations. It is always desirable that controversies be settled quickly and finally, but it is also desirable that they be settled correctly. (Footnotes omitted.)

The authority of the Secretary to modify or change previous decisions has long been recognized by the

courts. In an early case, *Knight v. U. S. Land Association,* 142 U.S. 161 (1891), a decision had been made by the Commissioner of the General Land Office from which no appeal had been taken. The Secretary of the Interior nevertheless sent for the case and after review reversed the Commissioner. The Supreme Court, answering an argument that the Secretary had no authority to so act, stated (at p. 181):

> It makes no difference whether the appeal is in regular form according to the established rules of the Department, or whether the Secretary on his own motion, knowing that injustice is about to be done by some action of the Commissioner, takes up the case and disposes of it in accordance with law and justice. The Secretary is the guardian of the people of the United States over the public lands. The obligations of his oath of office oblige him to see that the law is carried out, and that none of the public domain is wasted or is disposed of to a party not entitled to it. He represents the government, which is a party in interest in every case involving the surveying and disposal of the public lands.

This same principle was reaffirmed in a later decision by the Supreme Court in *West v. Standard Oil Company,* 278 U.S. 200 (1929). This was an action brought by Standard Oil to enjoin the continuation of administrative proceedings in the local land office. The question involved was whether a particular area in California was known to be mineral in character in 1903,

the date of approval of a survey by the Department. If the land was not then known to be mineral in character, title to the land passed to the State of California under an act of Congress and through California to Standard Oil. The Department of the Interior had initiated an administrative proceeding to determine the question in 1921. The Secretary of the Interior ordered the proceedings dismissed. A successor Secretary reinstated the proceedings and was enjoined from proceeding by the lower court. In reversing the decision below, Justice Brandeis stated for the Court (at p. 210):

> If at the time of Secretary Work's order the Department still had jurisdiction of the land, he possessed the power to review the action of his predecessor and to deal with the matter as freely as he could have done if the dismissal of the proceedings had been his own act or that of a subordinate official. For, so long as the Department retains jurisdiction of the land, administrative orders concerning it are subject to revision. *New Orleans v. Paine,* 147 U.S. 261, 37 L. ed. 162, 13 Sup. Ct. Rep. 303; *Beley v. Naphtaly,* 169 U.S. 353, 364, 42 L. ed. 775, 779, 18 Sup. Ct. Rep. 354; *Lane v. Darlington,* 249 U.S. 331, 63 L. ed. 629, 39 Sup. Ct. Rep. 299; *Parcher v. Gillen,* 26 Land Dec. 34; *Aspen Consol. Min. Co. v. Williams,* 27 Land Dec. 1. Compare *Louisiana v. Garfield,* 211 U.S. 70, 75, 53 L. ed. 92, 96, 29 Sup. Ct. Rep. 31.

Other cases to the same effect are cited in *State of Wisconsin et al.,* 65 I.D. 265 (1958).

As the Court stated in *West v. Standard Oil Company, supra,* the Secretary may reconsider and revise decisions so long as he retains jurisdiction of the land. The Secretary may not reconsider a matter previously decided when title or a right in the land has vested in a claimant under the public land laws either as a result of the issuance of patent (*Iron Silver Min. Co. v. Campbell,* 135 U.S. 286 (1890), by operation of law (*West v. Standard Oil Company, supra*), or by grant of a license, easement, or right-of-way (*Chapman v. El Paso Natural Gas Company,* 204 F.2d 45) (C.A. D.C. 1953)).

CONCLUSION

The Mountain Boy No. 1 placer mining claim and the K. C. Schuyler Nos. 2 and 3 placer mining claims are null and void and the mineral entries are canceled.

The Mountain Boy Nos. 6 and 7 placer mining claims and the Harold Shoup Nos. 1, 2, 3 and 4 placer mining claims are valid and, upon approval of a proper application, patents may issue except for 35.4 acres of non-mineral land in Harold Shoup No. 3.

CONTESTEES' PROPOSED FINDINGS OF FACT

The Contestees filed 549 Proposed findings of Fact. The material portions of the proposals have, in substance, been found in the body of the decision and identified in the footnotes. The remaining proposed

findings are denied as being immaterial or not supported by the evidence.

/s/

Dent D. Dalby
DENT D. DALBY
Chief Hearing Examiner

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